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NOTE

seventh volume (1938–40) of *Mineralogical Abstracts* contains bstracts. They are roughly grouped under the following headings:

tificial Minerals (pp. 137, 282, 471).
bliographies (p. 322).
emical Crystallography (pp. 277, 480).
ys (pp. 94, 420).
our of Minerals (pp. 134, 525).
stal-optics (pp. 247, 403).
nomic Minerals and Ore-deposits (pp. 147, 430).
wth and Corrosion of Crystals (pp. 288, 531).
tory and Biography (pp. 15, 318).
truments and Apparatus (pp. 253, 399).
thematical Crystallography (p. 239).
teorites and Tektites (pp. 61, 171, 265, 371, 534).
cellaneous (pp. 52, 104, 159, 208, 255, 308, 350, 405, 459, 506, 552).
seums and Collections (p. 18).
w Minerals (pp. 9, 58, 119, 168, 221, 263, 314, 369, 417, 468, 512).
ices of Books (pp. 1, 55, 111, 167, 219, 311, 367, 415, 467, 511).
sical Properties (pp. 243, 400).
cious Stones (pp. 124, 328, 516).
udomorphs (p. 500).
dioactivity (pp. 341, 497).
k-forming Minerals and Petrology (pp. 20, 178, 292, 444).
ographical Mineralogy (pp. 112, 335, 502, 548).
ays and Crystal-structure (pp. 79, 226, 381, 487).
lites (p. 344).

he preparation of the abstracts the indexing has been kept tly in view. Many points receive a bare mention in the abstracts re their inclusion in the index. It is hoped that by this means cher will be put in touch with the original literature. The Alpha- Index (pp. 578–663) of AUTHORS, subjects, and *Localities* is pre- y a Topographical Index (pp. 559–577).

ERRATA AND ADDENDA

PAGE.	LINE.	
		Mineralogical Abstracts, vol. 2.
133	3*	*For* HO *read* H_2O
245	13	*For* Gazetta *read* Gazzetta
568	11*	*For* Bohemia *read* Moravia
		Mineralogical Abstracts, vol. 3.
394	11	*For* 2·33 *read* 9·33
394	5*	*For* 48·81 *read* 40·81
		Mineralogical Abstracts, vol. 6.
339	17	*For* 10,000 *read* 100,000
443	19	*For* (SO_3) *read* (SO_4)
544	7* (col. 1)	*For* 354–6 *read* 254–6
578	16* (col. 2)	*For* sulparsenites *read* sulpharsenites
585	1* (col. 1)	*For* $CuCl_2.H_2O$ *read* $CuCl_2.2H_2O$
		Mineralogical Abstracts, vol. 7.
1	6*	*For* newberryite *read* newberyite
10	8	*For* научнои *read* научной
31	17*	For *Petrographic* read *Petrologic*
59	4	*For* Quetana *read* Quetena
64	13*	*For* Davies *read* Davis
67	15*	*For* fuset *read* fused
74	2*	*For* **6**–410 *read* **6**–401
75	18	*For* Wein *read* Wien
114	5*	*For* gold mine *read* copper mine
115	9	*For* MgO 4·45 *read* MgO 4·54
120	4	*For* $(OH)_3$ *read* (OH)
134	18	*For* pp. 111–113 *read* pp. 111–114
134	24	*For* lazulite *read* lazurite
152	12	*For* северо-босточного *read* северо-восточного
169	13	*Add* β 67° to axial ratios
226	2	*For* 2V 34° 14′ *read* 2V 13° 14′.
239	7	*For* *b* 10·05 *read* *c* 10·05
257	5	*Add* 1 pl.
260	13	*For* a show *read* show a
271	16	*For* Kazakstan *read* Kazakhstan
282	4*	*For* Borky (G. B.) *read* Boky (G. B.)
306	6*	*For* actinolite-schist *read* actinolite-schist,
309	14	*Add* pp. 67–76
323	9	*For* consists *read* consist
361	10*	*For* Hunyady *read* Hunyad
394	5*	*For* *x* 0·025 *read* *x* 0·25
418	8*	*Add* no. 1,
446	21	*For* CaO 21·46 *read* CaO 12·46
451	18*	*For* 6 pl. *read* 6 pls.
461	2	*For* урале *read* Урале
490	16*	*For* pp. 566–571 *read* pp. 566–576

* From bottom of page.

NERALOGICAL ABSTRACTS

(Vol. 7, No. 1, March, 1938.)

Notices of Books.

ux (Alfred). *Le volcan actif de l'île de la Réunion et ses produits.* ris (Gauthier-Villars), 1936, ix+297 pp., 1 map (1:100,000), pls.

splendidly illustrated book gives a complete account of the active (Piton de la Fournaise) of Reunion and the lithology of its Part 1 publishes for the first time a description of the island and volcano from a manuscript of Alexis Bert dated 1791. Part 2 s observations made by the author himself in 1911. Part 3 is a unt of the rocks with very many analyses, the rocks from the olcano and those from the massif of the Piton des Neiges being separately. An appendix gives biographical notices of early rs and contemporary accounts of the activity of the volcano 1751 and 1768. The book is full of valuable information for lcanologists and petrologists. Items of mineralogical interest two new analyses of olivine; alteration of olivine by oxidation of oceanite flows producing iridescent and reddened crystals ave been described in the past under the names of chusite and ; observations made in reflected light on titanomagnetite, and haematite, with descriptions of some interesting inter- ; and pseudobrookite in the central cavities of basalt stalactites. are well crystallized in amygdules in lavas of the Piton des species listed are chabazite, analcime, faroelite, mesolite, te, apophyllite, gyrolite, and natrolite. Analyses, refractive and densities are given both for basalt-glass, of which some a form like the Pelé's hair of Hawaii, and for the residual glass of the basaltic lavas. For comparison analyses of glasses from s are republished, and new analyses are given of a hair-like from Tanna in the New Hebrides and of the andesite of which glassy form. Phosphates found in a basalt cave include miner- wberryite, redondite, lecontite, brushite, and struvite. Car- in fissures are calcite, aragonite, and magnesite; an analysis of nesite (*d* 2·927) gave: MgO 42·46, CaO 5·28, Fe_2O_3 0·55, S 0·83, 36, H_2O 0·67, total 100·15. Sulphur filling vesicles in a basalt ed to be of magmatic origin. Some black sands carrying mag- nd ilmenite yield between 16 and 23 % TiO_2. A deposit of

silica consisting essentially of siliceous cells of grasses with some water diatom tests is named 'mascareignite'. Analysis gave: 83·07, $Al_2O_3+Fe_2O_3$ 2·00, MgO 1·44, CaO 0·64, H_2O 13·61, total 1 The origin of the deposit is unknown.

The lavas of the active volcano belong to two main types: labrad basalts poor in olivine, and oceanites very rich in olivine and a The latter occur as true flows. They differ from the labradorite-b chiefly in their higher percentage of olivine, which rises from 7 to Settling of olivine during crystallization is the probable cause c difference. Stalactites and stalagmites of basalt formed in tunne caves, and also the 'perimorphoses' and 'eisomorphoses' (moulds a ternal casts of trees) engulfed in the lava are described. The lavas cone of the active volcano are classified as aphyric basalts, porph olivine-basalts, 'doleritic basalts and dolerites', ankaramites oceanites. In the older extinct volcano of Piton des Neiges the recent lavas are basaltic: in earlier flows basalts are accompani andesites, trachytes, and a pantellerite. The basalts belong to the kinds as those forming the cone of the active volcano with the ad of a type carrying phenocrysts of plagioclase. Certain coarse-gr rocks occur. They are classified as periodotite, harrisite, fels picrite, olivine-gabbro—there is a complete passage between thes theralites, a mixed dolerite-monzonite dike, akerite, and alkali q syenite. Some of these are inclusions, others are found as boulder some are intrusions. It appears that coarse-grained rocks can b duced in the body of a volcano at relatively shallow depths althou grain of the rocks is that generally associated with plutonic cond A final chapter draws comparisons between the lavas of the extin the active volcano, and adds some remarks on those of Mauritiu Rodriguez. Altogether there are 73 analyses of rocks as well as quoted for comparison, and there are many important remarks classification of the rocks and their relationships. W. C

Niggli (Paul). *Das Magma und seine Produkte unter besonderer B sichtigung des Einflusses der leichtflüchtigen Bestandteile.* I. *Physikalisch-chemische Grundlagen.* Leipzig (Akademische V gesellschaft), 1937, xi+379 pp., 276+52 figs. Price 32 RM. (34 RM.).

'Die leichtflüchtigen Bestandteile im Magma' was the title of a thesis by Prof. Paul Niggli published in Leipzig in 1920. This bo been frequently quoted and often discussed, but its circulation

e been very limited for a work of such importance and it was not accessible in this country. The author has now embodied in a more comprehensive work his views on this important subject role of volatile constituents in rock-magmas. The aim of this to be published in two parts, is to draw from physical chemistry, gy, and geology all that those sciences can now offer towards the etation of the behaviour of magmas and the formation of igneous The part now published is a thorough discussion of the contribu- f physical chemistry to the problem. It is of course mainly con- with the application of the phase rule, first to 'condensed' s (without considering gaseous phases) and then to the more t problems presented by systems containing volatile constituents. and ternary systems which have been studied experimentally cussed, particular attention being paid to those involving silica. phenomena are given an important place in the treatment. ections are devoted to the influence on the fabric and texture of aggregates, of the 'kind' of crystallization, and of the presence tile constituents. Homogeneous equilibria are discussed in a ling chapter, which includes diagrams to show the course of tiation in rock provinces of 'Atlantic' and 'Pacific' types. All tems discussed in the book are indexed and the data for many ystems giving weight and molecular percentages are tabulated. troduction contains a table of silicates and melting-points, and volatile constituents of rock-magmas with melting, boiling, and tion points and critical temperatures. In order to follow the ions the reader needs to be thoroughly conversant with the phase d its applications. No more elementary treatment of such com- stems is to be expected. The main conclusions which the author re to be found in short summaries. Petrologists will look forward second part of this book, which will bring into relation with the tional sciences of geology and petrology the conclusions that een drawn from all the available physical-chemical data. The is one of the few living mineralogists sufficiently well equipped task. W. C. S.

HNIKOV (V. N.)] Лодочников (В.Н.). Серпентины и серпен- ниты Ильчирские и другие и петрологические вопросы, с ними язанные.—LODOČNIKOW (Wartan N.). *Serpentine und Serpen- ite der Iltschirlagerstätte und im Allgemeinen und damit verbun- ne petrologische Probleme.* Труд. Центр. Научно-Иссл. Геол.-Разв.

Инст. (Trans. Centr. Geol. & Prosp. Inst.), Leningrad, 1936, no 817 pp., 50 figs., 1 map. (Russian with German summary.)

This thick volume, bewildering though it may be at the first plu is nevertheless a remarkable achievement. The account of the pentine complex of Ilchir (SW. of Lake Baikal), to which some 150 p are devoted, serves as a prelude to a long discussion on the origi serpentine and of ultrabasic (hyperbasic) rocks in general, with casional digressions to other problems in petrology. Those who Russian will undoubtedly enjoy this rambling but wittily critical well-documented essay (it contains no less than 1950 references!). impression left on the reader is that all authors from Theophrastu the present day have been summoned before the judgement seat that few of them have come through the ordeal unscathed.

A discussion of the nomenclature in vogue for the serpentine gr of minerals heads mainly towards criticism of the superabundanc names. The name serpentinite is suggested for a rock mainly comp of serpentine minerals and these are catalogued as antigorite, chryso bastite, and serpophite [Min. Mag. **23**–637], the last being a new n suggested to cover compact resinous and microcrystalline or isotr varieties, in place of such terms as ophite, metaxite, picrolite, &c. O names are considered superfluous. Asbestos is reserved for the fi elastic variety of chrysotile, while for similar varieties of amphi the names of amianthus or byssolite are retained. The acces minerals of Ilchir serpentinites are magnetite, brucite, fuchsite, and carbonates. Olivine and pyroxene are found as relict minerals

In addition to the detailed description of the serpentinite comple Ilchir, the author gives a description of the surrounding schists particular the serpentinized carbonate rocks, which in his opinion metasomatically contact-altered limestones. Rocks similar to listwä are common, but the term listwänite is considered ambiguous and recommended for further use. The component minerals of these sc are quartz, serpentine, talc, sericite, fuchsite, albite, magnetite. carbonates are of variable composition even in a small fragment (c mite, ankerite, breunnerite, pistomesite). A new mineral from a qu carbonate-schist is described under the name of eikotourmaline [Mag. **23**–628]. This mineral has not been found in sufficient quantit allow a chemical analysis. It occurs in the form of needles, brown greenish, with a patchy distribution of colour, pleochroic, absorp $\alpha < \beta$, $\beta - \alpha$ 0·030–0·032, 1·662 $> \beta >$ 1·658, $\alpha \leqslant$ 1·628, nega 2V 37·5°, 40° (brown variety), 32°, 37° (green variety). Another min

e amphibole, is named antiglaucophane [Min. Mag. **23**–625]. It s from normal glaucophane in its scheme of absorption ($\alpha \geqslant \beta > \gamma$). e most stimulating part of the book is a discussion on the origin of ıtinites and ultrabasic rocks. In a study which is both historical ritical the author boldly attacks well-established gravitational and l-fractionation hypotheses of differentiation of the magma. He s the independent existence of an ultrabasic magma rich in les. The concentration of volatiles during the late stages of ication of this magma results in the autometamorphism of the formed solid phase, e.g. serpentinization. This volatile enrich- during the late stages is part and parcel of the 'law of polarity'— elopment of the idea of E. S. Larsen [M.A. **4**–129]—the late atic processes are characterized by those constituents which are ıt in relatively small amounts in the original magma. The polar nts give rise to polar minerals which are present in the late veins the contact-metamorphic zones. Such polar elements of ultra- nagmas are Ca, Al, Si, Na, K, and they give rise to grossular, lite, corundum, albite, &c. The hypothesis of desilicification as d to albite and plumasite veins is proved to be untenable and the sion of these veins with later acid intrusions is denied. These are genetically connected with the ultrabasic magma itself and nt its residual products. In the same way Bowen's reaction ble, in its narrow application to dry systems, cannot be applied magmatic processes. The order of separation of minerals from a is not always the same, nor can it be inferred from the degree morphism of the minerals. Serpentinization is determined by ous factors, such as the depth, the size and the shape of the ve body, the velocity of intrusion, the contents of the volatiles magma, &c. The asbestiform variety of serpentine, to which a chapter is devoted, is explained as being due to the solidification idal gel under tension and not to the infilling of open fissures. work is well indexed according to the subject-matter, place- and authors, and is provided with a good German summary 8–770). S. I. T.

AN (A. E.)] Ферсман (A. E.). Геохимия. Том III. [*Geochemis-*. Vol. 3] Химтеорет [Khimteoret], Leningrad, 1937, 503 pp., figs. Price 15 rub. (bound 16 rub. 50 kop.).

third volume of this work is far more extensive than the preceding .A. **6**–338] and a short abstract cannot do it justice. It is, in a

way, an amplification of the previous volumes, with the introduc of the principle of energetics, especially of the concepts evolved by author during the last two or three years [M.A. **6**–469, 470, 471]. Chapter VIII (the numeration of chapters and figures is carried from the previous volumes) the periodic law of Mendeleev in its appl tion to geochemistry is discussed. In Chapter IX the energy of crystal lattice and the *EKs* are discussed and their applicatio crystal-chemistry is outlined. In Chapter X the principles of energe are applied to the paragenesis of minerals and to various geochem processes. A new concept—'paragene'—is introduced. Paragene function depending on crystal-chemical constants and energy ind It is suggested that, when accurately determined, it will serve to fix relative position of compounds (minerals) in the paragenetic succes In Chapter XI the principles of energetics are applied to the cla [M.A. **6**–286] of geospheres and cosmospheres. The clarkes of var systems are shown to represent energetic stability levels. The o object of the present volume is to give an outline of geochemistry b on a small number of independent variables and governed by law energetics. The book is provided with separate appendixes to chapter and three appendixes giving the list of terms and symbols u a list of chemical elements with their constants, and a bibliograph

S. I.

[Fersman (A. E.) & Shubnikova (O. M.)] Ферсман (А. Е.) и Шубни (О. М.). Спутник геохимика и минералога. [*Geochemist's mineralogist's companion.*] Moscow & Leningrad (Lomon Inst., Acad. Sci.), 1937, 415 pp., 1 pl., 48 figs. Price 17 rub. 50

This is a useful book of reference, or vade-mecum, giving, most tabular form, a vast collection of facts and data relating to minerals. material has been compiled by several contributors under the guidan A. E. Fersman with Mrs. O. M. Shubnikov as responsible editor. Diffe sections are devoted to physics and chemistry, crystallography, cry chemistry and isomorphism, geochemical processes, mineralogy, p graphy, geology, literature, and weights and measures. L. J.

[Levinson-Lessing (F. Y.) & Struve (É. A.)] Левинсон-Лес (Ф. Ю.) и Струве (Э. А.). Петрографический Словарь. [*P graphical lexicon.*] 2nd edit., Leningrad-Moscow, 1937, 416 p

The original 'Petrographisches Lexikon' of Loewinson-Lessing wr in German and published in 1893–94 contained 3329 items. A Fr

n was issued by the International Geological Congress in 1901, and sian edition appeared in 1933. The present second Russian edition ns 5858 items, including the names of rocks, the names of their ies, and textural, structural, and other terms in use or obsolete. v every term has a reference to the literature. The second edition s work includes many modal analyses from Tröger's 'Kompendium' 6–97]. S. I. T.

G (W. L.). *Atomic structure of minerals.* London (Oxford Univ. 'ress), 1937, xiii+292 pp., 144 figs (some on 9 pls.). Price 18*s.* and Cornell Univ. Press, Ithaca, N.Y., 1937, Price $3.75.]

is fifteenth volume of the series 'The George Fisher Baker non-nt lectureship in chemistry at Cornell University' [M.A. **6**–1] does ntain the substance of the lectures given there by the author in That material had been already published in his book 'The lline state' [M.A. **5**–385]. Instead, the opportunity has been of presenting to mineralogists a useful summary of the crystal-tures of all minerals (arranged under species in the order: elements, s . . . silicates) that had been worked out up to the end of 1936. readable descriptions of the structures are accompanied by refer-to the literature and many new drawings, mostly two-dimensional showing clearly the pattern of the structure. Part I (pp. 3–40) general accounts of the geometry of crystal patterns, methods of analysis, and the general principles of mineral structures. This stereochemistry of minerals in which there are no molecules, but epetition of a pattern throughout the crystal. The isomorphous ure of end-members with a definite chemical formula 'is based on nciple which is fundamentally wrong' (p. 37). L. J. S.

ELLER (W. R.). *The analytical chemistry of tantalum and niobium: he analysis of their minerals and the application of tannin in gravi-netric analysis.* With a foreword by G. Roche Lynch. London Chapman & Hall), 1937, xvi+198 pp. Price 21*s.*

is valuable treatise on a field of chemical analysis in which reliable accurate methods were for long quite lacking is for the most part densed and collated summary of the results published by the author several collaborators in a series of 33 papers, mostly in 'The yst'. It will be indispensable to any one attempting the analysis inerals in which tantalum or niobium is present, even in small nt, while many of the new methods described will probably inspire

advance in other fields of analytical chemistry. Both qualitative a quantitative methods are described for the detection and estimation niobium and tantalum in admixture with large or small amounts most of the other elements. The new methods are largely based on t use of tannin, which serves both as a specific and as a group reage under proper conditions. Details are given for the preparation of pu niobic and tantalic oxides. M. H. H.

Davison (E. H.). *Field tests for minerals.* London (Chapman & Ha 1937, viii+60 pp., 12 pls., 3 text-figs. Price 7*s.* 6*d.*

Clear and concise details for blowpipe tests, spot tests with organic agents, and a few micro-chemical tests are condensed into 17 pages. Det minative tables based on lustre, hardness, and streak occupy 26 pag The common Cornish mineral mispickel has been overlooked, and there numerous misprints. The plates give excellent photographic reproductio of mineral specimens illustrating different types of structure, but th have little bearing on the text. The whole amounts to a single chapter a text-book of mineralogy, and the price is much too high. L. J. S.

Holmes (Arthur). *The age of the earth.* London (Thomas Nelson Sons), 1937, x+263 pp., 4 figs. Price 1*s.* 6*d.*

The first edition of 1927 [M.A. 4 113] was several times reprinted, a this second edition has been entirely rewritten and much enlarged. gives an excellent and readable account of the various methods estimating geological time. The chapters dealing with the meth based on radioactivity give full technical details, including age formu and tables of all the recent analyses of radioactive minerals. The auth then wanders off with meteorites into space beyond the Milky Way, a concludes that all the trouble started about 2,000,000,000 B.C. A bibl graphy of recent scientific papers is added. The attractive little volu is well printed in clear type on good paper and is nicely bound. T author and publishers are to be congratulated on producing a speculat scientific treatise at the very low price of eighteen pence. L. J. S.

Beringer (Carl Chr.). *Geologisches Wörterbuch. Erklärung der geol schen Fachausdrücke für Geologen, Paläontologen, Mineralogen, Be ingenieure, Geographen, Bodenkundler, Studierende und alle Freu der Geologie.* Stuttgart (Ferdinand Enke), 1937, vii+126 pp., 51 f Price RM. 5.60 (bound 6.90).

This is a useful little dictionary giving the meanings and derivati with concise explanations of a large number of geological terms. Th

mostly to physical and structural geology. There are a few
al petrological terms, but none for mineralogy. The author of a
is in many cases stated, but there are no references to the litera-
Names of geological formations are collected in a 4-page table
alphabetical index at the end of the volume. L. J. S.

New Minerals.

ZNIKOVA (O. M.)] Шубникова (О. М.). Новые минералы, откры-
ые в 1933 1934 гг. [*New minerals discovered in the years 1933–34.*]
руды Ломоносов. Инст. Акад. Наук СССР (Trans. Lomonossov
nst. Acad. Sci. U.S.S.R.), 1936, no. 7, pp. 307–339.
s is supplementary to the report on new minerals for the years
52 [M.A. 6–51]. It includes also many old minerals for which new
appeared in the literature of 1933–34. L. J. S.

MOV (N. E.)] Ефремов (Н. Е.). Карачаит—новый минерал—
EFREMOV (N. E.). *Karachaite—a new mineral.* Изв. Акад. Наук
CCP, Отд. Мат. Ест. Наук, Сер. Геол. (Bull. Acad. Sci. U.R.S.S.,
l. Sci. Math. Nat., Sér. Géol.), 1936, pp. 921–928. (Russian with
nglish summary.)
achaite, a new mineral from the asbestos deposit of Shaman-
gen, Karachai, NW. Caucasus, is described. It is an asbestiform
y of chrysotile serpentine, sp. gr. about 2·20, yellowish, positive
tion, α' 1·542, γ' 1·546. Analysis by V. Krylova gave: SiO_2 47·12,
2·82, Fe_2O_3 2·58, MgO 30·90, CaO 3·20, H_2O-13·48, H_2O+
= 100·86, corresponding to $MgO.SiO_2.H_2O$. The relations of this
al to the other members of the same group is discussed.
S. I. T.

OYUCHENKO (D. P.)] Сердюченко (Д. П.). Пикроамозит —новый
инерал.—SERDUČENKO (D. R.) [sic]. *Picroamosite—a new mineral.*
Изв. Акад. Наук СССР, Отд. Мат. Ест. Наук, Сер. Геол. (Bull.
Acad. Sci. U.R.S.S., Cl. Sci. Math. Nat., Sér. Géol.), 1936, pp. 689–
96. (Russian with English summary.)
roamosite, a new variety of orthorhombic amphibole, was found
region of the river Malaya Laba, northern Caucasus. It is fibrous,
e, greenish-grey, almost colourless in section, slightly pleochroic,
tion straight, α 1·626, β 1·638, γ 1·651, 2V 87°, positive, dispersion
, $r < v$. Analysis gave: SiO_2 55·90, TiO_2 nil, Al_2O_3 1·13, Fe_2O_3
FeO 0·68, MnO 0·49, MgO 29·26, CaO 0·94, alkalis nil, H_2O-3·20 =

99·88. Two isomorphous series are postulated: ferroanthophylli amosite–gedrite and magnesioanthophyllite–picroamosite–ferrigedri The genesis of picroamosite is related to the action of granitic mag on the serpentine-rocks of the region. S. I. T

[Chirvinsky (P. N.)] Чирвинский (П. Н.). Фошаллазит из Хибинск тундры.—Tschirwinsky (Peter). *Foschallasit aus der Chibi tundra.* Академику В. И. Вернадскому к пятидесятилет научной и педагогической деятельности. Акад. Наук СС [Vernadsky jubilee volume, Acad. Sci. U.S.S.R.], 1936, vol. pp. 757–763, 3 figs. (Russian with German summary.)

This mineral occurs as snow-white veinlets associated with calcite a mesolite in the lovchorrite mine on Yukspor Mt. It is scaly, sometim as spheroidal aggregates; sp. gr. 2·5, H. $2\frac{1}{2}$–3. The minute scales ha a perfect tabular cleavage with pearly lustre; $Bx_a \perp$ cleavage, 2V 12–1 negative, α 1·535, β 1·542, γ 1·549, $\gamma - \alpha$ 0·018, $\gamma - \beta$ 0·001. Analysis I. D. Borneman-Starynkevich gave SiO_2 32·65, R_2O_3 1·89, CaO 45· Na_2O 0·40, H_2O- 0·16, ign. 16·66 = 97·21; formula $3CaO.2SiO_2.3H_2$ The mineral is related to foshagite [M.A. 2–520] and centrallassite, fr which it is named *foshallassite.* L. J. S

Quensel (Percy). *Minerals of the Varuträsk pegmatite. V. Mangc apatite and manganvoelckerite.* Geol. För. Förh. Stockholm, 19 vol. 59, pp. 257–261. [Cf. M.A. **6**–485–7.]

Bluish-green prisms of manganapatite, associated with albite, ha sp. gr. 3·22, ω 1·6459, ϵ 1·6411, and gave anal. I. A paler blue apati found as remnants at the bottom of pits on the weathered surface the rock, has ω 1·6402, ϵ 1·6365 and gave II, in which CaF_2 is larg replaced by CaO. This is called manganvoelckerite. It sometimes for a zone around manganapatite, and the suggestion is that the sup of fluorine was cut off during the later stages of growth.

	P_2O_5.	Fe_2O_3.	FeO.	MnO.	MgO.	CaO.	H_2O+.	H_2O-.	F.	Insol.	To
I.	41·50	—	0·26	5·32	0·04	50·31	0·25	0·03	3·41	0·35	99
II.	41·84	0·35	nil	4·31	0·10	52·00	0·17	0·04	1·43	0·18	100

II, also Al_2O_3 0·15, Na_2O 0·03, K_2O 0·07, Li_2O 0·01, Cl 0·02. L. J. S

De Leenheer (L.). *Sur l'hydroténorite, minéral nouveau; sur la ténor et sur l'identité de ce dernier minéral avec la mélanochalcite.* Bu Soc. Belge Géol., 1937, vol. 47, 3 pls., 5 text-figs.

Hydrotenorite is an amorphous black mineral banded with chrysocc from Étoile du Congo mine, Élisabethville, Katanga. Polished secti

-ray photographs show indications of crystalline structure; sp. gr. H. $3\frac{1}{2}$. Analysis gave CuO 80·87, Co_2O_3 0·90, SiO_2 8·04, H_2O – 99·58; deducting chrysocolla, the formula is deduced as H_2O. At 43° C. there is a loss of 4·26 % H_2O, at 120° of 5·76 %, 9° 9·75 %, and at 1000° oxygen is lost. Tenorite, occurring as an tion product of cuprite at Likasi, Katanga, has much the same rance, but gave more definite indications of crystalline structure; . 4·984, H. $3\frac{1}{2}$. Analysis, CuO 87·13, SiO_2 5·17, CO_2 1·02, H_2O = 99·30, is interpreted as a mixture of CuO, chrysocolla, and hite, as with melanochalcite and pitchy copper ore [M.A. **1**–263,]. L. J. S.

(R.). *The minerals formed on burning heaps in the coal basin of Kladno.* Bull. Internat. Acad. Sci. Bohême, 1937, preprint 7 pp., pl., 9 text-figs.

erals described from the burning waste heaps [M.A. **6**–357] are β-sulphur, γ- and red selenium, tschermigite (čermíkite), epsomite, ydrite, pickeringite, halotrichite, alunogen, mascagnine, sal-am-. Lapparentite [M.A. **5**–390, **6**–149] as chalk-white masses gave , β 1·470, γ 1·484, sp. gr. 1·892; SO_3 35·51, Al_2O_3 22·07, MgO 0·52, ·09, H_2O 40·69 = 99·88; 1 mol. H_2O is lost at 47° C., and seven- at 120°; formula $Al_2O_3.2SO_3.10H_2O = Al_2(OH)_2(SO_4)_2.9H_2O$. pite has α 1·511, β 1·543, γ 1·583; SO_3 40·09, Al_2O_3 2·94, Fe_2O_3 . FeO 0·54, MnO 0·10, MgO 3·04, CaO 0·67, Na_2O 0·53, K_2O 0·27, 33·42 = 100·48. Letovicite [M.A. **5**–145] gave α 1·501, β 1·516, 25, sp. gr. 1·804; SO_3 63·92, NH_3 20·19, agreeing with $(NH_4)_3$ $_4)_2$. *Kratochvilite* as pale bluish-violet or greenish pearly scales has 57, β 1·725, sp. gr. 1·19, m.p. 113° C.; analysis, C 92·44, H 7·28, s approximately with $C_{13}H_{10}$ (= fluorene, M.A. **6**–357). Another ic compound is probably an anthracene derivative. L. J. S.

(B. Rama) & Rao (L. Rama). *On "bidalotite" a new orthorhombic pyroxene derived from cordierite.* Proc. Indian Acad. Sci., Sect. B, 1937, vol. 5, pp. 290–296, 3 pls.

biotite-cordierite-hypersthene-granulite near Bidaloti in Mysore is tamorphosed sediment intruded by granite. It contains a lilac-red orthorhombic pyroxene with striking pleochroism, α pale v to colourless, β and γ lilac or purple; α 1·656, β 1·667, γ 1·672, , 2V 57°, negative. Two of the four analyses are SiO_2 53·16), TiO_2 1·35 (1·73), Al_2O_3 10·55 (4·90), Fe_2O_3 4·30 (3·43), FeO 17·10

(15·43), MgO 11·95 (18·19), Na_2O trace (1·38), K_2O nil (trace), H_2O+ 2· (1·80), total 100·41 (99·22), sp. gr. 3·20 (3·22). As small grains a plates, this mineral, named bidalotite, is an alteration product cordierite. The pleochroic haloes in the cordierite persist in the n mineral. The associated hypersthene has the usual pleochroism, α brig pinkish-red, γ bluish-green, n 1·72; and the new mineral also differs fr this in containing alumina. L. J. S.

Meixner (Heinz) & Pillewizer (Wolf). *Über Minerale, die teils Schrifttum, teils in Sammlungen als "Keramohalit" bezeichnet werd (Bosjemanit von Terlan in Südtirol, Eisenpickingerit* [sic] *v Dienten, Pickingerit* [sic] *von Mitterberg in Salzburg und ein Halotrichitvorkommen*). Zentr. Min., Abt. A, 1937, pp. 263–270.

The scaly habit and higher melting-point (113–114° C.) of keram halite (= alunogen) distinguish it from the 'hair-salts' of the hal trichite group, $R''Al_2(SO_4)_4.23H_2O$. Analyses of 'hair-salts' from Terla in Trentino and from Dienten and Mitterberg are interpreted as mixtur of minerals of the halotrichite group sometimes with epsomite, and t names magnesium-apjohnite [= bushmanite = bosjemanite], 'Manga pickingerit', and 'Eisenpickingerit' [i.e. pickeringite!] are suggested. L. J. S.

Dittler (E.) & Kirnbauer (F.). *Die Kaolinlagerstätte von Torniel (Mittelitalien)*. Zeits. Prakt. Geol., 1937, vol. 45, pp. 117–12 4 figs.

A 20 m. vein of kaolin in quartz-trachyte is worked at Torniell 56 km. S. of Siena. A network of veinlets in the kaolin is filled with yellowish or grey clay mineral which is completely amorphous, showi no X-ray pattern; sp. gr. 2·432, H. 2, n 1·535–1·536. Analysis of materi air dried at 18° gave SiO_2 33·45, TiO_2 trace, Al_2O_3 30·46, Fe_2O_3 0·2 MgO 0·02, CaO 0·01, Na_2O 0·03, K_2O 0·04, P_2O_5 0·48, H_2O + 15·6 H_2O(110°) 1·37, H_2O (over H_2SO_4) 18·43 — 100·24; ratios Al_2O_3:SiO_2 H_2O = 1:1·88:6·58; formula $Al_2Si_2O_5(OH)_4.H_2O$. Dehydration curv are given. The mineral is an amorphous form of halloysite and is name *torniellite*. L. J. S.

Grim (R. E.), Bray (R. H.), & Bradley (W. F.). *The mica in argi laceous sediments*. Amer. Min., 1937, vol. 22, pp. 813–829, 2 figs

A micaceous constituent, in particles usually less than 1μ, separate by aqueous suspension from clays and shales from Illinois gave for th

samples of the fine colloidal fractions: I, Ordovician shale near , Calhoun Co.; II, Pennsylvanian underclay near Fithian, Ver- Co. The approximate formula $2K_2O.3MO.8R_2O_3.24SiO_2.12H_2O$ less K_2O and more H_2O than in muscovite. Optical and X-ray nd dehydration curves also show certain differences from mus- and sericite. The name *illite* is suggested as a general term for nstituent of argillaceous sediments. [Cf. pholidoide and phyllite, Mag. **24**–620–1.]

$_2$.	TiO_2.	Al_2O_3.	Fe_2O_3.	FeO.	MgO.	CaO.	Na_2O.	K_2O.	Ign. (+110°).
10	0·50	25·12	5·12	1·52	3·93	0·35	0·05	6·93	6·82
22	0·53	25·19	4·59	1·70	2·84	0·16	0·17	6·09	7·49

al.	H_2O+.	H_2O-.	$SiO_2 : R_2O_3$.	$SiO_2 : Al_2O_3$.	γ.	$\gamma-\alpha$.	2V.
·44	7·18	1·90	3·00	3·39	1·598	0·033	5°
·70	7·14	1·45	3·02	3·36	1·588	0·033	5

L. J. S.

r (Mark C.). *Lopezite, a new mineral.* Amer. Min., 1937, vol. 22, n. 929–930.

s is potassium dichromate ($K_2Cr_2O_7$) and occurs as minute orange- ils on tarapacaite (K_2CrO_4) and dietzeite in vughs in the soda- leposits of Tocopilla and Iquique in Chile. Implanted on it are ng crystals of ulexite. It gave α 1·714, β 1·732, γ 1·805, and micro- cal tests in agreement with the artificial salt. L. J. S.

ON (Dwight M.). *Woodhouseite, a new mineral of the beudantite roup.* Amer. Min., 1937, vol. 22, pp. 939–948. 4 figs.

ll, colourless to flesh-coloured crystals occur in vughs in quartz m the andalusite deposits [M.A. **5**–288], together with augelite **6**–288], lazulite, &c., at White Mountain, Mono Co., California. are rhombohedral, $a:c = 1:1{\cdot}170$ (α 91° 42′), with perfect basal ge and cube-like habit or platy on (111). Sp. gr. 3·012, H. $4\frac{1}{2}$; lly uniaxial, ω 1·636, ϵ 1·647, but larger crystals show biaxial s with 2V up to 20°. Analysis by A. Rautenberg, P_2O_5 18·13, 7·59, SiO_2 0·30, Al_2O_3 36·63, MgO 0·11, CaO 12·31, SrO 0·25, ·00, Na_2O 0·08, K_2O 0·02, H_2O+ 13·25, H_2O- 0·20 = 99·87, $2CaO.3Al_2O_3.P_2O_5.2SO_3.6H_2O$. This is the composition originally ed to svanbergite, which was afterwards found to contain SrO l of CaO [Min. Mag. **22**–252]. The relations of the alunite-beu- e group are discussed. L. J. S.

McConnell (Duncan). *The substitution of SiO_4- and SO_4-groups f PO_4-groups in the apatite structure; ellestadite, the end-member.* Am Min., 1937, vol. 22, pp. 977–986, 2 figs.

A mineral resembling wilkeite, occurring as pale rose stringers wi wollastonite, idocrase, and diopside at Crestmore, California, approach the end-member of the apatite group with P_2O_5 almost wholly replac by SO_3 and SiO_2. Analysis by R. B. Ellestad gave P_2O_5 3·06, SO_3 20·6 SiO_2 17·31, CO_2 0·61, Al_2O_3 0·13, Fe_2O_3 0·22, MnO 0·01, MgO 0·4 CaO 55·18, Cl 1·64, F 0·57, H_2O+ 0·53, H_2O- 0·10 = 100·52. T following data for this mineral are compared with those for two spe mens of wilkeite from Crestmore and fluor-apatite from Farada Ontario [M.A. **5**–480].

	a.	*c*.	*c*/*a*.	Sp. gr.	ω.	ϵ.	P_2O
Ellestadite	9·53Å.	6·91	0·7251	3·068	1·655	1·650	3·06
Wilkeite	9·48	6·91	0·7289	3·120	1·650	1·646	14·4
,, ...	9·40	6·89	0·7330	3·157	1·640	1·636	32·2
Fluor-apatite	9·36	6·88	0·7350	3·18	1·634	1·630	41·30

Si, S, and C replace P ions in the structure. A deficiency in F requi the presence of the voelckerite molecule, which is written as

$$(Ca,X)_{10}O_2(PO_4)_6 \text{ or } (Ca_9C)O_2(PO_4)_6.$$ L. J. S.

Hurlbut (Cornelius S., *Jr.*) & Taylor (Ralph E.). *Hilgardite, a n mineral species, from Choctaw salt dome, Louisiana.* Amer. Mi 1937, vol. 22, pp. 1052–1057, 4 figs.

The sandy insoluble residue accumulating at the bottom of a bri well in rock-salt consists mainly of anhydrite together with dolomi magnesite, hilgardite, boracite, danburite, &c. The colourless glas crystals, $\frac{1}{2}$–$1\frac{1}{2}$ cm. across, of hilgardite have the form of triangu plates on (010), being monoclinic-domatic with the dominant for *b* (010), *p* (111), *M* ($\bar{1}10$), *E* ($0\bar{1}\bar{1}$), and other small faces; $a:b:c$ 1·0147 : 1 : 0·5585, $\beta = 90° 0'$. Cleavage (010) perfect, (100) good. Sp. 2·71, H. 5, α 1·630, β 1·636, γ 1·664, 2V 35°, positive, $\beta = b$, $\gamma : c$ = 1 X-ray measurements gave *a* 11·35, *b* 11·12, *c* 6·20 Å., space-gro C^1_s or C^2_s. Analysis by F. A. Gonyer, B_2O_3 49·18, Cl 10·37, CaO 34· H_2O 6·31, insol. 1·89, total (less O for Cl) 99·82, gives $Ca_8B_{18}O_{33}C$ $4H_2O$, which occupies the unit cell. L. J. S.

Palache (Charles), Bauer (L. H.), and Berman (Harry). *Yeatman a new mineral, and sarkinite from Franklin, New Jersey.* Am Min., 1937, vol. 22, no. 12, pt. 2, p. [11]. (Abstract.)

Clove-brown plates of yeatmanite embedded in willemite are tricli (pseudo-orthorhombic) with perfect cleavage (100), twinned on (02

ultiple twinning on (010). X-ray measurements give $a:b:c =$:1:0·4775, α 103° 49′, β 101° 45′, γ 87° 12′. Sp. gr. 4·80, H. 4; 3, β 1·905, γ 1·910, 2V 49°, negative. Composition $(Mn,Zn)_{16}$ O_{29}. L. J. S.

ock (M. A.). *Goldschmidtine, a new antimonide of silver.* Amer. Min., 1937, vol. 22, no. 12, pt. 2, pp. [11]–[12]. (Abstract.)

s mineral, distinct from dyscrasite (Ag_3Sb), was found with native ruby-silver, and galena on a specimen from Andreasberg, Harz. m-white to lead-grey, orthorhombic crystals are pseudo-hexagonal s twinned on (110), with $a:b:c = 0·6312:1:0·6860$. Sp. gr. 6·83, . The base-centred unit cell, a 7·75, b 12·32, c 8·42 A., contains b_{10}. Analysis by F. A. Gonyer gave Ag 64·78, Sb 35·01, S 0·06 = L. J. S.

History and Biography.

s (Mary Elvira). *The discovery of the elements.* 3rd edition, Easton, Pa. (Mack Printing Co.), 1935, 371 pp. Price $3.00.

e title of this book, which is a collective reprint of a series of s in the 'Journal of Chemical Education' [M.A. **6**–249], is rather ding; it is not so much an account of the discovery of the elements ollection of biographical sketches of the discoverers, from Brandt Kunckel to Coster and von Hevesy. Embellished with 195 portraits loes not mean that the 92 elements had 195 discoverers; there are s than seven portraits of Berzelius) and 95 other illustrations, ding several facsimiles of letters, this book may well be found of st for a leisure hour. Too literal translation from French or Ger- occasionally has amusing effects. M. H. H.

ks (Mary Elvira). *The discovery of tellurium.* Journ. Chem. Education (Amer. Chem. Soc.), 1935, vol. 12, pp. 403–409, 6 figs.

detailed account of the discovery of tellurium in Nagyág gold ores nite and nagyagite], with translations of correspondence between oth and Kitaibel, and portraits of Ignaz von Born (1742–1791) Paul Kitaibel (1757–1817). M. H. H.

er (Peter). *Historische Notiz zur stereographischen Projektion.* Zentr. Min., Abt. A, 1936, pp. 251–252.

e principle of the stereographic projection is mentioned in the nomical works of Ptolemy (about A.D. 150). L. J. S.

Flett (*Sir* John Smith). *The first hundred years of the Geological Surv of Great Britain.* London (His Majesty's Stationery Office), 193 280 pp., 14 pls. Price 7*s.* 6*d.*

A chapter on the antecedents that led to the founding of the Surv is followed by separate chapters dealing with the progress under ea of the successive directors: H. T. De la Beche (1835–55), R. I. Murchis (1855–71), A. C. Ramsay (1871–81), A. Geikie (1882–1901), J. J. Teall (1901–14), A. Strahan (1914–20), and J. S. Flett (1920–35). account is given of the opening ceremony of the new museum and offic in 1935; and an appendix gives a list, with biographical details, 291 geologists who have been on the staff. L. J. S.

Laitakari (Aarne). *Suomen Geologisen Seura historiikki 1886–193* With an English summary: *The history of the Geological Society Finland 1886–1936.* Bull. Comm. Géol. Finlande, 1936, no. 1 (= Compt. Rend. Soc. Géol. Finlande, no. 9), pp. 5–64, 5 p 2 text-figs.

With this history of the society, founded in 1886, are several appe dices giving lists of members, lectures, papers published, &c. Portra are given of F. J. Wiik (1839–1909) the first president of the socie Nils Nordenskiöld (1792–1866), K. A. Moberg (1840–1901), J. Sederholm (1863–1934), W. Ramsay (1865–1928), K. H. N. Gylli (1858–1886), and others. Together with 27 papers by various autho this forms the jubilee volume of the society. L. J. S.

Bayley (W. S.). *Mineralogy's contribution to the other sciences and industry.* Amer. Min., 1937, vol. 22, pp. 147–168.

Presidential address giving an historical review. L. J. S.

Spencer (L. J.). *Some mineral names.* Amer. Min., 1937, vol. pp. 682–685.

Examples are given of the changes in meaning which the names minerals may undergo in the course of time (e.g. alcohol, sapphi siderite, &c.), and of the confusion arising when the same name applied to different minerals. L. J. S.

Hiller (Joh. Erich). *Boëce de Boodt, précurseur de la minéralo moderne. Boetius de Boodt. A turning-point in the history mineralogy.* Ann. Guébhard-Séverine, Neuchâtel, 1936, vol. pp. 74–80 (French), pp. 80–81 (outline in basic English).

Anselm Boethius de Boodt (1550–1632) was born at Bruges and d there on June 21, 1632. He was physician to Rudolph II at Pra

he wrote his 'Historia gemmarum et lapidum', published at ver in 1609 (later Latin editions in 1636 and 1647, and French ations in 1644 and 1649). This dealt not only with gemstones and supposed medicinal virtues and counterfeits, but described 647 ent kinds of gems, minerals, fossils, and stones, and it is really an treatise on mineralogy. L. J. S.

BI (P.). *Domenico Guglielmini e la cristallografia.* Periodico Min. Roma, 1937, vol. 8, pp. 163–175.

account is given of the crystallographic work of D. Guglielmini – 1710), who wrote 'Riflessioni filosofiche dedotte dalle figure de' Bologna, 1688; reprinted Padova, 1706) and 'De salibus dissertatio blaris physico-medico-mechanica' (Venetia, 1705). He observed ach salt had a form of its own with constant angles, and he elabor- views on the structure of crystals. L. J. S.

HER (Walther). *Abraham Gottlob Werner (1749–1817) in Schilde- ngen bedeutender Zeitgenossen.* Mitteilungen des Roland. Verein ür Sippenforschung und Wappenkunde, Dresden, 1936, vol. 21, pp. 54–60.

Abraham Gottlob Werner in Darstellungen der bildenden Künste. bid., pp. 61–67, 5 pls.

LZ (—) & WENSCH (Kurt). *Die Ahnen Abraham Gottlob Werners.* bid., pp. 67–68.

preciations by contemporary authors, including Goethe. Forty- eproductions are given of portraits, busts, and medals, several of are copies varying somewhat from the originals. His only n ancestors are father, mother, and maternal grandfather.

L. J. S.

ERS (A. W.). *The pioneers in South African geology and their work.* Trans. Geol. Soc. South Africa, 1937, annexure to vol. 39, iii + 139 pp, 7 pls.

graphical notes and a review of their work are given of many gists from the eighteenth century up to the time of the foundation e Geological Society of South Africa in 1895. Portraits are given G. Atherstone (1814–98), who determined the first diamond found uth Africa, E. J. Dunn (1844–1937), and G. A. F. Molengraaff.

L. J. S.

Erdmannsdörffer (O. H.). *Carl Heinrich Ferdinand Rosenbusch. Z seinem 100. Geburtstage 24. Juni 1936.* Sitz.-ber. Heidelber Akad. Wiss., Math-nat. Kl., 1936, Abh. 3, 12 pp.

An appreciation of the influence of H. Rosenbusch [1836–1914] on t development of petrography. L. J. S.

Museums and Collections.

The student's index to the collection of minerals. British Museum: Natur History. 27th edit., London, 1936, 39 pp., 3 plans on wrappe Price 1*s*.

This shows an increase of 6 pages on the 26th edition of 1922 [M. **2**–6]. It lists 3864 names of species, varieties, and synonyms of minera represented in the collection, with references to the cases where they a kept. Chemical names are included, but these are not clearly disti guished from compound mineral names. Iron sulphide is sulphide iron, but iron pyrites (better iron-pyrites) is not pyrites of iron.

L. J. S.

A guide to the Mineral Gallery. British Museum: Natural Histor 14th edit., London, 1937, viii+60 pp., 3 pls., 3 plans on wrappe Price 6*d*.

This is an extension of the penny guide [M.A. **1**–145, **2**–6] which fir appeared in 1889, rewritten and with the addition of three plates. It popular in character, being intended for the ordinary visitor. The are several minor errors and inconsistencies. L. J. S.

Walker (T. L.) & Parsons (A. L.). *The Royal Ontario Museum Mineralogy.* Museums Journ., London, 1936, vol. 35, pp. 412–41 1 pl., 1 text-fig.

Repetition of a previous paper [M.A. **5**–395]. The collection has be largely added to by collecting expeditions by members of the staff Canadian mineral localities, and by using this material, of which a lar stock is available, for exchanges with other museums. L. J. S.

Catalogue of the crystal models and mineral specimens in the students' fi year series. Department of Mineralogy and Petrology, Cambridg 1934, 33 pp. (interleaved). Price 1*s*.

Brief descriptions of 55 crystal models and 237 mineral specimens. L. J. S.

rts on the museums of Ceylon, British Malaya, the West Indies, etc. London (Museums Assoc.), 1933, 58 pp.

tory of museums in Ceylon, British Malaya, Hong Kong, Sarawak, British North Borneo, Fiji, the West Indies, British Guiana. London (Museums Assoc.), 1934, 67 pp. Price 5*s.* with Report.

KHAM (S. F.). *The museums of India.* Part I, *A general survey.* Part II, *Directory of museums and art galleries.* London (Museums Assoc.), 1936, 229 pp., 25 pls. Price 5*s.*

ese vols. 5 and 6 complete the series on the museums of the British ire [M.A. **6**–394]. L. J. S.

INLEY (W. C.). *Directory of American mineral and gem collectors and collections.* 1st edition, 1936, 22 pp. Price 10*c.*

der towns, arranged alphabetically, in each of the States of U.S.A., es and addresses are given of some 2,000 private collectors, amateur aries, and public museums. The pamphlet is published by the r but without any address or place of publication. The author's ess, however, appears in the directory under Peoria, Illinois.

L. J. S.

ENBURG (Edmund). *Internationaler Geologen- und Mineralogen-Kalender 1937.* Herausgegeben von der Deutschen Geologischen Gesellschaft. Stuttgart (F. Enke), 1937, xvi+558 pp. Price RM. 10.

is edition shows an increase of 192 pages on the last issue for 1933– M.A. **5**–198]. The address-list (376 pp.) gives over 10,000 names of gists, mineralogists, &c. Surveys, universities and colleges with more important museums, and societies (sections II–IV in previous s) are now collected together under countries and towns.

L. J. S.

NISTER (F. A.). *The preservation of minerals and meteorites.* Museums Journ., London, 1937, vol. 36, pp. 465–476.

long list is given of the localities of those specimens of pyrite and asite in the British Museum collection of minerals that show signs decomposition. This can be arrested by the treatment previously ibed [M.A. **5**–396]. Lists are given of deliquescent and efflorescent rals, and those altered by exposure to light or changes in tempera- Colour changes in certain minerals when exposed to light are d. Meteorites are protected from oxidation by a coating of vinyl te or in an atmosphere of dry nitrogen [M.A. **6**–399]. L. J. S.

Rock-forming Minerals and Petrology.

Emmons (R. C.). *Plagioclase determination by the modified universal stage*. Amer. Min., 1934, vol. 19, pp. 237–259, 14 figs.

A description is given of the application of the author's modifie universal stage [M.A. **4**–209] to the determination of plagioclases ar their twins. The procedure is described and the constructions require are explained by means of diagrams and an example. The auth remarks that there is no established nomenclature for the axes of t universal stage and proposes a new one, making four. The simplificati and speeding up of determinations resulting from the addition of t new inner E.-W. axis is considerable. A footnote records two adjace lamellae in a twin of plagioclase in which values of α differ by 0·000 and of β by 0·0011, indicating a compositional difference of 2–3 % A

W. C. S.

Ho (T. L.). *A rapid method for the determination of plagioclase by t Fedorov universal stage*. Amer. Min., 1935, vol. 20, pp. 790–79 3 figs.

Suggests methods by which the procedure proposed by Emmons f the modified universal stage with five axes of rotation can be used wit the Fedorov stage with only four axes of rotation. The author recon mends a short cut to the usual method for finding the position of a pri cipal axis in an optical symmetry plane. It depends on observation the interference colours as the section is rotated [but it is not so reliab as the classical method, and may eventually entail loss of time]. H also describes a method for determining the position of a cleavage plane of association after the position of orientation of the section obtained, but it depends on a graphical solution. Direct measurement are not possible without the new, inner E.-W. axis, added by Emmon An example is given of the working out of a felspar twin by the Emmo procedure.

W. C. S.

Dolar-Mantuani (L.). *Plagioklas aus der Leiserschlucht bei Spitt a. d. Drau*. Zeits. Krist., 1936, vol. 94, pp. 313–316, 2 figs.

Tables are given showing the position of cleavage and twin-plane the optic axial angle, &c., for plagioclases containing various proportio of anorthite.

H. H.

ER (C. T.). *The Tertiary igneous rocks of the Pakokku district and the Salingyi township of the Lower Chindwin district, Burma, with special reference to the determination of the felspars by the Fedoroff method.* Mem. Geol. Soc. India, 1936, vol. 48, pt. 2, pp. i–xii, 221–296, i–xxvi, 11 pls., 30 text-figs. Price Rs. 4–12 = 8*s*.

account of the geology of the area is followed by long descriptions dividual rock slices. Five chemical analyses are given of olivine-o, gabbro, hornblende-granulite, a quartz-oligoclase-bearing hybrid and basalt. Determinations of felspars are plotted on a Reinhard gram, and twin-laws and zoning of the felspars are discussed.

L. J. S.

WSKA-CHLIPALSKA (Eugenia). *O składzie chemicznym pewnych adularów—Sur la composition chimique de quelques adulaires.* Arch. Min. Tow. Nauk. Warszaw. (Arch. Min. Soc. Sci. Varsovie), 1937, vol. 13, pp. 20–27 (Polish), pp. 28–31 (French résumé).

alyses of adularia from I St. Gotthard, II Bourg d'Oisans, Dauphiné, II Krimml, Salzburg, give for $R_2O:Al_2O_3:SiO_2$ the ratios 0·9711: 03, 0·9973:1:6·1294, and 0·9744:1:6·1164 respectively. [Cf. 5–217.]

SiO_2.	Al_2O_3.	Fe_2O_3.	BaO.	CaO.	Na_2O.	K_2O.	H_2O-.	Total.	Sp. gr.
64·70	18·66	0·20	0·78	0·19	1·74	13·44	0·09	99·80	2·5715
64·87	18·51	0·23	0·92	0·23	1·99	13·08	0·07	99·90	2·572
64·80	18·40	0·32	0·68	0·26	1·46	13·70	0·09	99·71	2·568

L. J. S.

ENBACH (E.). *Die Dichte des reinen Kalifeldspatanteils im Mikroklin und dessen allgemeine chemische Zusammensetzung.* Zentr. Min., Abt. A, 1936, pp. 231–239, 1 fig.

alyses of microcline and microcline-perthite are calculated to mole-ratios Mi: Ab: An and plotted on a triangle. The average composition croclines from pegmatites is Mi 75·30, Ab 23·13, An 1·57 mol. %. alculated density of Mi is 2·559. [Cf. M.A. **6**–292.] L. J. S.

OBA (Karl) & ENGELS (Agnes). *Der Einfluß der Kalifeldspat-komponente auf die Optik der Plagioklase. II. Chemismus und Optik der Endglieder Albit, Anorthit und Mikroklin.* Zentr. Min., Abt. A, 1937, pp. 103–116, 4 figs. [Cf. M.A. **6**–210.]

—— —— *III. Die optische Orientierung kalifeldspathaltiger Plagio-klase.* Ibid., pp. 129–149, 2 figs.

w chemical and optical data (orientation, but not refractive indices) iven for the following felspars. I, albite from Rischuna, Switzer-

land; II, anorthite, Monte Somma, Vesuvius; III, microcline, Silve Leaf mine, Manitoba; IV, albite-oligoclase, Monteagle, Ontario: V, ol goclase, Monteagle, Ontario [M.A. **5**–439]; VI, andesine, Nishishiada mura, Shinano, Japan; VII, labradorite, Tamatave, Madagascar VIII, bytownite, Crystal Bay, Minnesota. No connexion can be trace between the potash content and the migration curves of the ellipsoi axes α, β, γ.

	SiO_2.	Al_2O_3.	Fe_2O_3.	MgO.	CaO.	Na_2O.	K_2O.	ign.	Total.	Sp. g
I.	67·45	19·68	0·40	0·13	0·26	11·20	0·32	0·35	99·79	2·62
II.	43·32	35·89	0·21	0·66	19·32	0·49	0·30	—	100·19	2·76
III.	64·03	19·12	0·37	—	0·15	2·24	14·05	0·08	100·04	2·57
IV.	65·94	20·47	0·58	—	1·54	9·91	1·09	0·25	99·78	2·62
V.	63·85	22·01	0·61	—	2·90	9·05	1·08	0·32	99·82	2·63
VI.	58·95	24·79	0·77	0·74	7·06	6·49	0·99	—	99·79	2·66
VII.	54·61	28·68	0·26	—	10·90	4·66	0·76	—	100·02	2·69
VIII.	49·46	31·73	0·49	—	14·48	3·41	0·34	0·18	100·09	2·70

VII, also TiO_2 0·15.

L. J. S.

Reinhard (M.) & Bächlin (R.). *Über die gitterartige Verzwillingun beim Mikroklin.* Schweiz. Min. Petr. Mitt., 1936, vol. 16, pp. 215 225, 8 figs.

The poles of the twin lamellae and the optical directions in microclin in a gneiss from Monte Tamaro, Tessin, were determined on the universa stage and plotted. The poles of the pericline lamellae extend from (100 to (15.0.$\bar{1}$) in the zone [010]. If the crystal is monoclinic, rather tha triclinic, then the twin-axes of the pericline and albite twins coincid and the cross-hatching would be due to intercrossing albite twinning The measurements obtained cannot decide this. [M.A. **5**–217.]

L. J. S.

[Soustov (N. I.)] Соустов (Н. И.). О щелочном полевом шпате и окрестностей Христиании в южной Норвегии.—Soustov (N. I.) *On the alkaline feldspar from the vicinity of Oslo in south Norway* Труд. Петр. Инст. Акад. Наук СССР (Trav. Inst. Pétrogr. Acad Sci. U.R.S.S.), 1936, no. 7–8, pp. 25–29. (Russian with Englis summary.)

A microcline-anorthoclase from a nordmarkite near Grorud, Osl district, gave on analysis (average of two analyses): SiO_2 65·90, Al_2O 19·45, Fe_2O_3 1·03, MgO nil, CaO 0·61, Na_2O 7·12, K_2O 6·20, H_2O+ 0·19 H_2O- 0·03 = 100·53. Sp. gr. 2·591, α 1·5261, γ 1·5314, 2V (thre grains) 80°, 84°, 85°, negative. S. I. T.

YREV (A. K.).] Болдырев (А. К.). О морфологии, генезисе и классификации пертитов и других полевошпатовых сростаний в связи изучением Тигирецких берилловых пегматитов.—BOLDYREV A. K.). *Über Morphologie, Genesis und Klassifikation der Perthite nd anderer Feldspatverwachsungen in Zusammenhang mit der Unterachung der Beryllpegmatite der Tigireklagerstätte im Altaigebirge.* руд. Центр. Научно-Иссл. Геол.-Разв. Инст. (Trans. Central eol. Prosp. Inst. U.S.S.R.), 1934, no. 12, 47 pp., 7 pls., 3 text-figs. Russian with German summary.)

Tigiretzk, Altai Mts., the pegmatites are composed of albite, line-microperthite, muscovite, quartz, and a bluish-green beryl als 1·5×0·35 m.). The classification of perthites proposed by dersen (1928) and H. L. Alling (1932) is amplified and the genetic ple strongly emphasized. The amount of plagioclase in perthites granite is 7 to 21 %, and from pegmatite 24 to 29 %.

S. I. T.

ER (J. W.) & THIEL (G. A.). *The occurrence of fine grained authigenic feldspar in shales and silts.* Amer. Min., 1937, vol. 22, pp. 842–46.

hanical analysis of Ordovician shale from Minneapolis, Minnesota, the largest amounts of material as grains 1/16 and 1/512 mm. . The former consists mainly of quartz, and the latter is shown by cal and X-ray analysis to be mainly orthoclase. L. J. S.

ART (Duncan, *Jr.*). *An occurrence of detrital authigenic feldspar.* mer. Min., 1937, vol. 22, pp. 1000–1003, 1 fig.

ins of microcline isolated from glacial sand near Mt. Morris, Michiare surrounded by a border, probably of potash-felspar, with l character and orientation different from those of the central

L. J. S.

BUT (Cornelius S., *Jr.*). *X-ray determination of the silica minerals submicroscopic intergrowths.* Amer. Min., 1936, vol. 21, pp. 727–30, 4 figs.

rtz, tridymite, cristobalite, and perthite can be distinguished by X-ray patterns and intensity curves. Spherulites and the groundof rhyolite from New Mexico so examined show the presence of palite and perthite. L. J. S

[Belyankin (D. S.) & Petrov (V. P.)] Белянкин (Д. С.) и Петр (В. П.). О кристобалите в горных породах Кавказа и Закавказь —Beliankin (D. S.) & Petrov (V. P.). *Chrystobalite in the boc* [rocks] *of Caucasus and Transcaucasia.* Изв. Акад. Наук СС Отд. Мат. Ест. Наук, Сер. Геол. (Bull. Acad. Sci. U.R.S.S., Sci. Math. Nat., Sér. Géol.), 1936, pp. 303–319, 2 text-figs. (Russi with English summary.)

A review is given of the 23 occurrences of cristobalite in the Tertia and Quaternary basalt, andesite, trachyandesite, trachyte, and daci of the main Caucasian chain and Transcaucasia. S. I. T.

Fox (Cyril S.). *The solubility of quartz.* Rec. Geol. Survey India, 193 vol. 69, pp. 423–425, 1 pl.

Quartzite pebbles in conglomerate of the coal measures of Jharia sho signs of corrosion, attributed to solution by surface waters.

L. J. S.

Cooke (H. C.). *An unusual hypersthene from Lake Athabaska, Saska chewan.* Univ. Toronto Studies, Geol. Ser., 1937, no. 40, pp. 67–6

A brecciated norite partly replaced by nickeliferous pyrrhotine, co sists of light grey hypersthene and felspar ($Ab_{55-60}An_{45-40}$) with ve little accessory biotite and garnet. The hypersthene is colourless in th section, n 1·70–1·71, birefringence 0·015–0·016, 2V 61–63°, negativ Analysis by R. J. C. Fabry gave SiO_2 48·91, TiO_2 0·83, Al_2O_3 3·5 Fe_2O_3 0·30, FeO 24·16, MnO 0·16, MgO 19·59, CaO 0·59, Na_2O 0·0 K_2O 0·12, H_2O+ 0·99 = 99·16. L. J. S.

Verhoogen (Jean). *A monoclinic "hypersthene" from the Cascade lava* Amer. Journ. Sci., 1937, ser. 5, vol. 33, pp. 63–69, 2 figs.

Optical data are given for pyroxenes in andesites and dacites from th Cascade Range in Washington and Oregon. These include hypersthen (α 1·676, β 1·687, γ 1·695, 2V 75–85°, negative), diopsidic augite (α 1·69 1·695, β 1·695–1·715, γ 1·715–1·725, 2V 60°, $\gamma:c = 43–51°$), pigeonit (2V 40–45°, $\gamma:c = 35°$), and a monoclinic 'hypersthene'. The la resembles hypersthene in appearance and pleochroism, but in the zone crystals gives extinction-angles ranging from 4° in the core to 18° i the rim; 2V 65–85°, negative. From a rock analysis the compositio of this mineral is deduced as SiO_2 57·0, Al_2O_3 1·2, FeO 16·8, MgO 20·4 CaO 3·2. The optical data differ from those of clinohypersthene [M.A **6**–211]. L. J. S.

HERT (Róbert). *Kristálytani megfigyelések egy börzsönyi andezittufa chány ásványán.*—REICHERT (Robert). *Kristallographische Beobachtungen an einigen Tuffmineralien aus dem Börzsönyer-Gebirge.* Földtani Közlöny, Budapest, 1935, vol. 65, pp. 342–349, 4 figs. (German with Hungarian summary.)

zite crystals from andesite-tuff show the forms *a b m s c p o z* a's letters]; $\gamma:c = 38$–$40°$, α 1·678, γ 1·702. Common green blende shows the forms *m b c d u a, z* (201), and *k* (111); $\gamma:c = 16°$, 68, γ 1·680. Garnet crystals show zonal structure but are perfectly pic; they enclose plagioclase, magnetite, hypersthene, biotite, and te. V. Z.

KIS (Norman). *A petrological study of the Portrush sill and its veins.* Proc. Roy. Irish Acad., 1937, vol. 43, sect. B, no. 9, pp. 95–134, pls., 10 text-figs.

hick sill of olivine-dolerite in Co. Antrim has a roof of hornfelsed and is penetrated by veins of hornfels, porphyrite, &c. Five types roxene are distinguished: augite (2V about 58°, $\gamma:c = 40°$, anal. I); augite (2V about 60°, $\gamma:c = 50$); pigeonite (2V 38°, $\gamma:c = 45°$, 0·022, anal. II); hypersthene (2V 52–54°, $\gamma - \alpha$ 0·015); and diopside 58–60°, $\gamma:c = 42°$). Anal. III, marginal type of olivine-dolerite.

SiO_2.	TiO_2.	Al_2O_3.	Fe_2O_3.	FeO.	MnO.	MgO.	CaO.	Na_2O.	K_2O.	H_2O+.	H_2O-.
1·05	0·50	5·23	0·90	7·35	0·25	14·18	19·10	0·39	0·07	0·50	0·50
0·15	2·40	1·95	2·15	17·22	0·65	13·08	11·02	0·38	0·12	0·60	0·40
6·51	0·84	15·60	0·99	9·14	0·16	9·05	11·77	1·89	0·72	1·79	0·75

nd II, also P_2O_5 trace. III, also Cr_2O_3 0·02, V_2O_3 0·02, NiO 0·07, CuO 0·15, 02, BaO 0·04, CO_2 0·07, P_2O_5 0·52, F 0·04, Cl 0·04, S 0·15.

L. J. S.

(W. A.). *Note on a pegmatitic hornblende from the Carsphairn omplex* [Kirkcudbrightshire]. Geol. Mag. London, 1937, vol. 74, pp. 359–361.

e pegmatite, consisting of quartz, hornblende, and sphene, forms ets of late residuum crystallization in the hornblende hybrids. The ish-black crystals of hornblende have α 1·659, β 1·669, γ 1·680, 9°, $\gamma:c = 24°$. Analysis gave SiO_2 50·18, TiO_2 1·58, Al_2O_3 4·27, 2·78, FeO 14·18, MnO 0·30, MgO 11·75, CaO 11·84, Na_2O 0·95, 0·51, H_2O+ 1·93, H_2O- 0·20 = 100·47; formula

$(OH)_{1·9}$ $(Na,Ca,K)_{2·2}$ $(Mg,Fe'',Fe''',Ti,Mn,Al)_5$ $[(Si,Al)O_{22}]$.

L. J. S.

Eskola (Pentti) & Kervinen (Tauno). *A paragenesis of gedrite and cummingtonite from Isopää in Kolvola, Finland.* Bull. Comm. Géol. Finlande, 1936, no. 115 (= Compt. Rend. Soc. Géol. Finlande, no. 9), pp. 475–487, 4 figs.

Garnet-amphibolite contains in a groundmass of plagioclase (Ab_3An_1) and quartz: I, greyish-green gedrite (sp. gr. 3·371, α' 1·674, γ 1·697); II, colourless cummingtonite (sp. gr. 3·307, α' 1·661, γ' 1·681); and III, almandine crystals up to 6 cm. across (n 1·810).

	SiO_2.	TiO_2.	Al_2O_3.	Fe_2O_3.	FeO.	MnO.	MgO.	CaO.	Na_2O.	K_2O.	H_2O
I.	43·70	0·55	10·88	3·52	26·53	0·24	11·48	0·54	1·24	0·15	1·2
II.	50·70	0·31	1·72	3·11	26·63	0·19	14·36	0·87	0·60	0·15	1·4
III.	37·31	0·72	20·00	—	34·56	1·00	3·89	2·48	—	—	—

L. J. S.

Wayland (Russell G.). *Cummingtonite from the Black Hills, South Dakota.* Amer. Min., 1936, vol. 21, pp. 607–610.

Brownish or greenish-grey, bladed or fibrous cummingtonite occurs in metamorphic rocks in the Homestake mine and at other localities near Lead. In fourteen specimens FeO ranges from 21·54 to 34·45 %, with corresponding variations in the physical data. Sp. gr. 3·19–3·40; α 1·653–1·672, β 1·670–1·694, γ 1·682–1·704, $\gamma-\alpha$ 0·025–0·040, $\gamma:c$ = 17–24°, $2V_\alpha$ 70–98° (those low in FeO are positive and with higher extinction-angle). Dimensions of the unit cell, containing two molecules $(OH)_2(Fe,Mg)_7(Si_4O_{11})_2$, a 9·50–9·55, b 18·18–18·23, c 5·33–5·35 Å. b and c seem to increase slightly with iron. Space-group C^3_{2h}.

L. J. S.

Rondolino (Rinaldo). *Sopra alcuni anfiboli manganesiferi di Praborna (San Marcel—Valle d'Aosta).* Periodico Min. Roma, 1936, vol. 7, pp. 109–121. [Cf. M.A. **6**–85.]

The following manganese-bearing amphiboles are associated with braunite, spessartine, violane, &c. I, Colophony-brown fibres and laminae, of the richterite type; metasilicate formula $H_8R''_{13}Si_{17}O_{51}$ with $R'_2R'''_2SiO_6$ in solid solution. II, Rosy fibres with violet reflections, also of the richterite type; $H_6R''_{12}Si_{15}O_{45}$ with $R'_2R'''_2SiO_6$. III, Straw-yellow flexible fibres, of the edenite type.

	SiO_2.	Al_2O_3.	Fe_2O_3.	MnO.	MgO.	CaO.	Na_2O.	K_2O.	H_2O+.	H_2O-.
I.	55·09	2·35	4·54	4·70	17·88	7·99	3·37	0·32	3·63	0·36
II.	55·23	6·06	trace	0·85	20·80	9·49	2·72	0·94	2·80	0·25
III.	48·28	8·55	1·58	6·76	18·29	9·46	3·94	0·26	2·44	0·32

Total.	Sp. gr.	α.	β.	γ.	$\gamma : c$.	2V.
100·23	3·00	1·610	1·627	1·639	22°	79° 12′
99·14	2·95	1·602	1·618	1·630	25	80 48
99·88	3·05	1·627	1·636	1·641	20	70 4

L. J. S.

ovnik (N. I.)] Наковник (Н. И.). Синие амфиболы магнетитовых варцитов Курской магнитной аномалии.—Nakownik (N. J.). *Blaue Amphibolen der Eisenquarzite aus der Gegend der Magnet-nomalie von Kursk.* Зап. Всеросс. Мин. Общ. (Mém. Soc. Russe lin.), 1934, ser. 2, vol. 63, pp. 94–108, 7 figs. (Russian with German ummary.)

zonal amphiboles from the magnetite-quartzite of the Kursk t are subdivided into five types in order of the increasing intensity ochroism (α yellow, β violet, γ blue). Types 1 and 2 are close to blite-tremolite, with optic axial plane parallel to (010) and 2V sing from 60° to 0° (between types 2 and 3). Beginning with 3 the dispersion of the optic axes and bisectrices is gradually sing and the optic axial plane is perpendicular to (010) with the ion of the 4th type in which the optic axial plane for violet is l to (010) and for red perpendicular to (010). The increase of 2V marked. The refractive index varies from α 1·636, γ 1·649 (type 1) ·677, γ 1·685 (type 5). It is assumed that the blue amphiboles are soda, but no analyses are given. S. I. T.

r (John E.). *Hastingsite in theralite from the Crazy Mountains, Montana.* Amer. Min., 1937, vol. 22, pp. 742–744.

stingsite as grains or sometimes in parallel growth with augite and ne-augite has α (dull yellow) 1·639, β (liver-brown) 1·658, γ ish-brown) 1·660, $\gamma : c = 38°$, 2V 38°, negative, $r < v$ strong. sis by F. A. Gonyer gave SiO_2 48·51, TiO_2 1·32, Al_2O_3 6·60, 4·09, FeO 9·48, MnO 0·19, MgO 14·79, CaO 5·60, Na_2O 6·01, 2·20, H_2O+ 1·47 = 100·26, sp. gr. 3·23; $(Na,K)_2Ca(Mg,Fe'',Fe''')_5(Al,Si)_8(OH)_2O_{22}$. A chemical analysis is given of the rock.

L. J. S.

ley (J. E.). *Riebeckite in quartz veins from the Michipicoten district, Ontario.* Amer. Min., 1937, vol. 22, pp. 1099–1103.

bules of fibrous riebeckite occur in quartz veins, with gold and ides, traversing granite and the adjoining basic volcanic rocks. 3, γ 1·699; $\alpha : c = 5\frac{1}{2}°$ (600 $\mu\mu$), 7° (589 $\mu\mu$), 9° (550 $\mu\mu$). The mineral es mica, epidote, &c., and is of hydrothermal origin. L. J. S.

Bowen (Norman L.). *A note on aenigmatite.* Amer. Min., 1937, vol. 2 pp. 139–140.

Phenocrysts in a pantelleritic lava from Lake Naivasha, Kenya, ga α 1·81, β 1·82, γ 1·88 (the birefringence being much higher than pr viously recorded for aenigmatite), extinction 38°; strong pleochroisr α yellow-brown, β brown, γ deep brown to black. L. J. S.

Mehmel (M.). *Ab- und Umbau am Biotit.* Chemie der Erde, 193 vol. 11, pp. 307–332, 8 figs.

—— *Thermischer Umbau am Biotit.* Fortschr. Min. Krist. Petr., 193 vol. 22, pp. xlvii–xlviii, 1 fig.

The biotite used in the experiments was from Ketilä, Impilaht Finland; analysis gave SiO_2 35·96, TiO_2 2·55, Al_2O_3 12·50, Fe_2O_3 7·8 FeO 15·12, MnO 1·02, MgO 9·29, Na_2O 1·96, K_2O 8·56, H_2O 4·96 = 99·73; β and γ 1·650, 2V near 0°. Strong acid (1/1 H_2SO_4) passed ov the small flakes for many hours extracted all the bases together wit some silica, leaving white flakes of amorphous silica (n 1·420). Wea acid acts in the same direction but much slower. Alkali produces a re iron coating on the flakes. Heated at 450–700° the biotite acquires yellow colour and n 1·823, 2E 82°. It is suggested that bleached biotit (bauerite) in sedimentary rocks has been confused with muscovite an clay minerals. L. J. S.

Hess (Frank L.) & Stevens (Rollin E.). *A rare-alkali biotite from King Mountain, North Carolina.* Amer. Min., 1937, vol. 22, pp. 1040 1044, 1 fig.

Biotite from the border of a spodumene-pegmatite in mica-schist gav α 1·555, β 1·589, γ 1·590, 2V 0–5°; SiO_2 42·02, TiO_2 1·35, Al_2O_3 18·7 Fe_2O_3 0·66, FeO 8·29, MnO 0·27, MgO 9·55, CaO 0·93, Li_2O 1·20, Na_2 0·73, K_2O 8·54, Rb_2O 1·85, Cs_2O 0·47, H_2O+ 2·44, H_2O- 0·16, F 4·34 total (less O for F) 99·72. Dark micas from the border of pegmatite from several other localities were examined spectroscopically for rar alkalis, and a redetermination of these in the 'caesium biotite' from Ti Mtn., South Dakota, gave Li_2O 0·65, Rb_2O 1·48, Cs_2O 1·12 [instead o 3·14, M.A. **5**–192]. L. J. S.

Gallitelli (Paolo). *Le miche del granito di Baveno.* Periodico Mi Roma, 1936, vol. 7, pp. 61–76, 4 figs.

The micas of the Baveno granite include: siderophyllite (I, green from a fayalitic nodule; II, greenish-black from a basic patch); lep

; zinnwaldite and protolithionite (zoned crystals with variable
l data); and muscovite (III, green resembling talc).

SiO_2.	TiO_2.	Al_2O_3.	Fe_2O_3.	FeO.	MnO.	MgO.	CaO.	Na_2O.	K_2O.
32·09	nil	13·33	17·75	19·88	0·31	2·19	1·15	1·50	6·30
30·49	1·17	16·40	14·01	18·00	0·69	2·40	1·10	4·88	5·65
47·64	nil	28·60	2·06	3·15	0·08	nil	trace	9·64	2·04

Li_2O.	H_2O+.	H_2O-.	F.	Sp.gr.	α.	β.	γ.	2E.
nil	4·68	0·60	0·30	3·12	1·612—1·614	1·667—1·669	—	3–6°
nil	3·79	0·93	0·61	3·06	—	—	—	—
0·91	4·39	—	2·80	—	—	1·582—1·584	1·585—1·587	36–39°

L. J. S.

ITARI (Mititaka). *A study on the influence of original composition pon the micas in the metamorphic rocks of the Hsian shui ssu series, the vicinity of Mt. Ta ho shang, south Manchuria.* Mem. Ryojun oll. Engineering, 1935, vol. 8, no. 4, pp. 67–84, 1 pl., 5 text-figs.
mical analyses are given of the schists and optical data for the ovite and biotite. L. J. S.

N (N. L.) & ELLESTAD (R. B.). *Nepheline contrasts.* Amer. Min., 936, vol. 21, pp. 363–368, 1 fig.
nocrysts of fresh and glassy nepheline from a phonolite lava flow es north of Nairobi, Kenya, gave analysis I; ω 1·535, ϵ 1·531. crysts from a lava flow of melilite-leucite-nephelinite near Bur- north of Lake Kivu, Belgian Congo, gave II; ω 1·544, ϵ 1·1540. omposition is expressed as solid solutions of $Na_8Al_8Si_8O_{32}$(Ne), Si_8O_{32} (Kp, kaliophilite), $Na_4Al_4Si_{12}O_{32}$(Ab), and $Ca_4Al_8Si_8O_{32}$(An), of which molecules conforms with the nepheline formula $Al_n(Na,K,\frac{1}{2}Ca)_nO_{32}$ of Bannister and Hey [Min. Mag. **22**–580]. 61·8, Kp 12·9, An 4·5, Ab 20·8) is the richest in silica, and II 7·0, Kp 37·6, An 4·4, Ab 1·0) the richest in potash, of any nephelines ously analysed. Analyses are also given of the rocks, showing that honolite from the eastern Rift is richer in soda, while the nephelinite the western Rift is richer in potash, corresponding with the com- on of the contained nepheline.

SiO_2.	Al_2O_3.	Fe_2O_3, FeO.	MgO.	CaO.	Na_2O.	K_2O.	H_2O+.	H_2O-.	Total.
46·41	31·07	0·78	0·11	0·87	15·67	3·81	0·97	0·17	99·86
40·74	33·39	0·83	0·25	0·91	12·53	11·13	0·23	0·06	100·18

II, also TiO_2 0·11, MnO trace.

L. J. S.

Bowen (N. L.) & Ellestad (R. B.). *Leucite and pseudoleucite.* Am. Min., 1937, vol. 22, pp. 409–415, 2 figs.

Porphyritic crystals of leucite in leucitophyre show white rims consisting of a mixture of orthoclase and nepheline; and leucite in the groundmass of leucite-theralite is often altered to the same minerals. Both of these leucites contain only 1–1·5 % Na_2O, and their alteration to nepheline indicates that soda was introduced by reaction with the magma. Analyses of these rocks, from Lake Kivu, Belgian Congo, are given. L. J. S.

Kunitz (Wilhelm). *Beitrag zur Kenntnis der magmatischen Assoziationen III. Die Rolle des Titans und Zirkoniums in den gesteinbildenden Silikaten.* Neues Jahrb. Min., Abt. A, 1936, Beil.-Bd. 7, pp. 385–466, 11 figs.

The composition of rock-forming silicates containing titanium and zirconium is discussed in detail. Ti^{IV} replaces Si in titangarnets, titanhornblendes (aenigmatite), titanmicas, titantourmaline, and titanolivine; Ti^{III} replaces Al in titanaugites; and Ca–Ti may be replaced by rare-earths, Al, Fe‴ in sphene (grothite and keilhauite). Replacements Zr–Hf are found in zircon (malacon, cyrtolite) and eudialyte; Zr–Ti in the astrophyllite group; and Ti(Zr)-Nb(Ta) in the låvenite group. A bibliography of 222 items is added. L. J. S.

Tsuboi (Seitarô). *Petrological notes (11)–(18).* Japanese Journ. Geol. Geogr., 1936, vol. 13, pp. 333–337, 1 fig. [Cf. M.A. **6**–210.]

Pumpellyite from Asahine, Titibu, Saitama, is a green fibrous mineral filling veins in basic igneous rocks; it is monoclinic with elongation || *b*-axis and twinned on (001); positive, $\beta = b$, $\alpha:a = 11–12°$; pleochroism α and γ almost colourless, β pale green; at 600° C. 1·29 % H_2O is lost without change in the crystal-structure, and at 800° C. 6·51 % H_2O is lost with change in the crystal-structure; analysis I. [Cf. Min. Mag. **24**–529.] Piedmontite from Ikadadu, Ehime, as crystals in sericite-piedmontite-quartz-schist; anal. II after deducting 2·77 % quartz. Biotite in uncontaminated biotite-granites from III Iwakura, Yamaguti, IV Tutiyane, Yamaguti, and V Sanage-mura, Aiti. Hornblende in amphibolite from Ipponmatu, Ehime; $\gamma:c = 18°$, anal. VI. Iso-orthoclase in hornfels from Sakuma-mura, Siduoka; $2V_\gamma$ ranges from 83° (positive iso-orthoclase) to 100° (negative, orthoclase). Cordierite in the same rock shows a still wider range in 2V from near 0° over γ (positive) to

0° over α (negative); in one crystal 2V about 80°, negative, 5; and in another 2V near 0°, positive, β 1·560. All analyses by naka.

SiO_2.	TiO_2.	Al_2O_3.	Fe_2O_3.	FeO.	MnO.	MgO.	CaO.	Na_2O.	K_2O.
37·53	0·14	25·39	1·74	2·95	0·13	2·65	22·56	0·58	nil
38·40	0·05	22·75	10·55	nil	3·14	0·30	22·70	0·23	trace
33·68	2·28	17·18	2·42	25·60	1·66	4·46	0·80	0·48	7·37
34·60	3·33	14·28	2·10	26·80	0·50	4·98	0·60	0·41	8·53
33·86	2·74	14·93	3·02	26·02	0·84	6·03	0·39	0·50	8·31
46·06	0·37	13·80	2·26	6·47	0·18	14·78	10·16	3·12	0·39

P_2O_5.	H_2O+.	H_2O-.	Total.	Sp. gr.	α.	β.	γ.	2V.
trace	6·37	0·09	100·13	3·2	1·686	1·690	1·698	36–40°
trace	1·68	0·20	100·00	—	1·730	1·744—1·747	1·765	74–90
0·23	3·50	0·15	99·81	—	—	—	1·673	—
0·08	3·30	0·15	99·66	—	—	—	1·670	—
0·08	3·10	0·43	100·25	—	—	—	1·672	—
trace	1·78	0·11	99·48	—	1·637	—	1·657	85

L. J. S.

ERUP (Niels-Henr.). *Korund, Høgbomit, Staurolith und Skapolith den Anorthositgabbros des Bergengebietes.* (Vorläufige Mitteilung.) Bergens Museums Årbok, for 1936, 1937, no. 8, 11 pp., 3 figs.

se minerals were recognized in thin sections of the rock.

L. J. S.

N (Esper S.), IRVING (John), GONYER (F. A.), & LARSEN (Esper S., *3rd*). *Petrographic results of a study of the minerals from the Tertiary volcanic rocks of the San Juan region, Colorado.* Amer. Min., 1936, vol. 21, pp. 679–701, 8 figs.; 1937, vol. 22, pp. 889–905, 5 figs.

e occurrence of different silica minerals in the various rocks lites, quartz-latites, with some andesites and basalts) is described, he conditions of their formation are discussed. Tridymite forms g rapid crystallization in the porous parts of the groundmass; and me rocks predominates over quartz, giving tridymite-rhyolite and mite-latite. Cristobalite is usually found in gas cavities. Chemical ses and optical data are given for pyroxenes and olivine, and the tions of formation of pigeonite are discussed. I (also F trace), ide phenocrysts in quartz-latite from Treasure Mtn. II, diopside ocrysts in andesite-latite from Los Pinos. III, diopside phenocrysts roxene-andesite from Sheep Mtn. IV, hypersthene phenocrysts the same rock as III. V, olivine in basalt from Buffalo Buttes. econd part of the paper deals with the amphiboles and biotite,

giving several chemical analyses and other data. These minerals a often resorbed and replaced by iron oxides. The conditions that det mine the crystallization of pyroxene or hornblende are discussed.

	SiO_2.	TiO_2.	Al_2O_3.	Fe_2O_3.	FeO.	MnO.	MgO.	CaO.	Na_2O.	K
I.	51·05	0·36	1·80	2·03	6·56	1·22	13·82	22·06	0·38	0
II.	51·45	0·36	1·50	3·15	6·45	0·53	14·11	21·69	0·32	
III.	50·74	0·95	2·98	2·37	10·04	0·17	14·24	17·88	0·67	
IV.	51·58	0·45	1·70	3·15	18·11	0·39	22·01	1·82	—	
V.	39·31	0·06	1·68	—	19·84	0·17	37·74	0·87	—	

	H_2O+.	H_2O-.	P_2O_5.	Total.	Sp. gr.	α.	β.	γ.	2V.	γ
I.	0·17	0·04	0·46	100·03	3·370	1·684	1·691	1·712	60°	
II.	0·16	nil	0·48	100·20	3·37	1·686	1·693	1·713	64	
III.	0·17	0·03	—	100·24	3·405	1·695	1·701	1·719	55	
IV.	0·40	—	—	99·61	3·481	1·702	1·707	1·712	—	
V.	—	—	—	99·67	—	1·675	1·694	1·712	90	

L. J. S.

Wells (Roger C.). *Analyses of rocks and minerals from the laborato of the United States Geological Survey 1914–36.* Bull. U.S. Ge Surv., 1937, no. 878, x+134 pp. Price 15 cents.

This supplements Bulletin 591, collecting together 1533 detail chemical analyses made during the period 1914–36. Some of them ha not been published previously. Analyses of igneous and crystalli rocks, sandstone and chert, carbonate rocks, slates and shales, clays a soils, ores and gangue minerals are each grouped under States. Analys (515) of minerals are classified chemically under elements, sulphides, & A table gives the relative abundance ('clarkes') of the chemical elemer according to the revision of A. E. Fersman, 1933 [M.A. **5**–433].

L. J. S.

[Zavaritzky (A. N.)] Заварицкий (А. Н.). Об одной важно петрохимической закономерности.—Zavaritsky (A. N.). *A important petrochemical peculiarity of igneous rocks.* Зап. Ленингра Горн. Инст. (Ann. Inst. Mines Leningrade), 1935, vol. 9, pp. 1–1 1 pl. (Russian with English summary.)

By recalculating, according to his own system of ratios, 135 analys of igneous rocks given by Daly [M.A. **5**–290] and by plotting the graphically, the author derives the following conclusions. In acid roc the femic portion is rich in iron oxides, in basic rocks, in magnesi and in alkali rocks, in lime. S. I. T.

EN (Norman L.). *Recent high-temperature research on silicates and its significance in igneous geology.* Amer. Journ. Sci., 1937, ser. 5, vol. 33, pp. 1–21, 10 figs.

tudy of the several systems involving SiO_2, Al_2O_3, FeO, CaO, MgO, , K_2O shows that with fractional crystallization the residue con- of alkali-Al silicate, $NaAlSiO_4$–$KAlSiO_4$–SiO_2, which is referred to etrogeny's "residua" system'. Plots of analyses of phonolites, ytes, and rhyolites from the East African Rift Valley fall within rea. It is suggested that these rocks represent the residual liquids crystallizing magmas. L. J. S.

GORIEV (D. P.) & ISKYUL (E. V.)] Григорьев (Д. П.) и Искюль Е. В.). Дифференциация некоторых силикатных расплавов как результат образования двух несмешивающихся жидкостей.— RIGORIEV (D. P.) & ISKÜLE (H. V.). *Differentiation of some silicate melts due to the formation of two immiscible fluids.* Изв. Акад. Наук СССР, Отд. Мат. Ест. Наук, Сер. Геол. (Bull. Acad. Sci. U.R.S.S., Cl. Sci. Math. Nat., Sér. Géol.), 1937, pp. 77–106, 14 figs. (Russian with English summary.)

silicate melt with CaF_2 and K_2CO_3 as fluxes (anal. I) showed a t gravitational separation of two glassy phases. The lower layer II) is an emulsion with minute glassy globules enclosed in a glassy dmass (anal. III). The upper layer (anal. IV), sharply separated the lower layer, contains a number of gas inclusions. The disperse (globules) of the lower layer is considered to represent the material upper layer, which was arrested during the gravitational separa- f the two liquids. It is suggested that the liquid immiscibility is rily determined by the presence of fluorine, and that boron and may probably have the same effect. A comparison is made with ite from Yalguba [M.A. **6**–303] and other rocks, and the question uation differentiation discussed.

SiO_2.	MgO.	CaO.	Al_2O_3.	F.	Total.	Refr. index.	Sp. gr.
53·15	14·28	12·41	11·95	3·06	94·85	—	—
47·35	18·31	15·23	12·49	2·30	95·68	—	2·452
34·46	27·26	21·50	13·67	0·63	97·52	1·582	2·540 (calc.)
66·69	4·20	5·82	10·68	4·82	'92·91'	1·490–1·505	2·321

S. I. T.

[Volarovich (M. P.), Tolstoy (D. M.), & Korchemkin (L. I.
Volarovič (M. P.), Tolstoj (D. M.), & Korčemkin (L. I.). *A stu
of the viscosity of molten lavas from Mount Alaghez.* Compt. Ren
(Doklady) Acad. Sci. U.R.S.S., 1936, vol. 1, pp. 333–336, 2 figs.

Viscosity measurements made with a rotating cylinder show t
relations existing between the composition of the rocks and the viscosi
of their melts at different temperatures. S. I. T.

[Korzhinsky (D. S.)] Коржинский (Д. С.). Подвижность
инертность компонентов при метасоматозе.—Koržinskij (D. S
Mobility and inertness of components in metasomatosis. Изв. Ак
Наук СССР, Отд. Мат. Ест., Сер. Геол. (Bull. Acad. Sci. U.R.S.
Cl. Sci. Math. Nat., Sér. Géol.), 1936, pp. 35–57 (Russian), pp. 5
60 (English).

The application of the phase rule to the rock-solution system allo
the calculation of the relative mobility of the components during t
process of metasomatism. It is found that the mobilities of the co
ponents are roughly proportional to their ionic radii. S. I. T.

Gilluly (James). *The water content of magmas.* Amer. Journ. S
1937, ser. 5, vol. 33, pp. 430–441.

A critical review of the literature, with the suggestion that de
seated basaltic magmas may contain 4 % and granitic magmas 8
H_2O. L. J. S.

Goranson (Roy W.). *Silicate-water systems: the "osmotic pressure"
silicate melts.* Amer. Min., 1937, vol. 22, pp. 485–490, 1 fig.

Differential hydrostatic pressure on silicate and water would oc
if the country-rock surrounding a magma were pervious to water a
impervious to the silicate melt. This problem is considered theoretical
L. J. S.

Wells (A. K.). *Petrographic nomenclature.* Geol. Mag. London, 19
vol. 73, pp. 319–325.

A committee appointed by the British Association for the Advan
ment of Science to consider and report upon petrographic nomenclatu
and classification has put forward for criticism a proposal to establi
a classification of igneous rocks into three divisions based on grain-s
in place of the classification widely, but loosely, used into three divisio
based on mode of occurrence. In order to illustrate the proposed sche

etails are given for the subdivision of the gabbro-dolerite-basalt , and of the granite-microgranite-rhyolite series. Different limits in-size are used in these two series, but the proposals are in practice s complicated as they may appear at first sight. W. C. S.

(John C.). *Igneous rock names and their evaluation.* Amer. Min., 936, vol. 21, pp. 427–441.

e haphazard naming of rocks and rock series and the re-definition rlier names are discussed. Names derived from localities are cated, and many of the names are quite unnecessary. L. J. S.

OLDS (Doris L.). *Augite-biotite-diorite of the Newry complex.* eol. Mag. London, 1937, vol. 74, pp. 476–477.

e rock described as 'augite-biotite-diorite' (Quart. Journ. Geol. London, 1934, vol. 90, pp. 609–611), and later in discussion called id sodi-potassic gabbro', 'gabbro-diorite', and biotite-essexite-co', is now named *garronite*, from the hill Slievegarron, Co. Down. L. J. S.

ETSKY (B. M.)] Куплетский (Б. М.). К вопросу о генезисе щелочных пород.—KUPLETSKI (B. M.). *On the genesis of alkaline ocks.* Изв. Акад. Наук СССР, Отд. Мат. Ест., Сер. Геол. (Bull. Acad. Sci. U.R.S.S., Cl. Sci. Math. Nat., Sér. Géol.), 1936, pp. 329–336 (Russian), pp. 337–339 (English).

single theory can account for all alkali rocks. The Kola peninsula ys three genetic types: (1) associated with alkali-granites (Khibina ovozero tundras); (2) associated with basic rocks (Gremyakha-es tundra, Afrikanda); (3) a possible case of limestone-magma xis (Turya peninsula, river Kovdora) [M.A. **6**–305–313].

S. I. T.

MANN (Eugène). *Sur la genèse des roches alcalines de Julianehaab (Groenland).* Compt. Rend. Acad. Sci. Paris, 1937, vol. 204, pp. 1125–1127.

rther observations on the spot modify the old view that these rocks ed by differentiation due to separation of the successively crystal- portions by gravity, and it is now thought that they consist of series of intrusive rocks from essexite through nordmarkite to lsonite-granite, resulting from intrusive masses which have digested

surrounding rocks, and (*b*) a group of strongly metamorphic rock lujaurites, naujaites, kakortokites, foyaites and other nephelin syenites, the transformation of which occurred subsequently to th intrusion of (*a*). They appear to consist of an original rock of whic the structure is more or less preserved, which has been chemically tran formed by additions from elsewhere, but without actual fusion occurrin

C. A. S.

Dixey (F.), Smith (W. Campbell), and Bisset (C. B.). *The Chilw Series of southern Nyasaland; a group of alkaline and other intrusi and extrusive rocks and associated limestones.* Bull. Geol. Surv. Nyas land, 1937, no. 5, 82 pp., 7+8 pls., 1 text-fig. Price 5*s*. Abstract Abstr. Proc. Geol. Soc. London, 1936, session 1936–37, pp. 8–10.

The rocks described, for which the term 'Chilwa Series' is suggeste occur in the vicinity of Lake Chilwa and elsewhere in southern Nyas land, as well as in the adjacent part of Portuguese East Africa. The comprise principally the following rocks: syenite, volcanic vents infill with carbonates and brecciated felspar-rock, a minor development hydrothermal rocks in the vents, nepheline-syenite, and swarms of ass ciated dikes of sölvsbergite, microfoyaite, phonolite, and nephelinit The intrusions and eruptions represent a hitherto unrecognized phase Karroo or early post-Karroo igneous activity. The volcanic vents ran from some only a few yards across to one nearly four miles in diamete The country-rocks are extensively altered and the vents are filled wi highly felspathic agglomerates and breccias associated in five of th larger vents with great masses of crystalline calcium carbonate, and a less extent of iron and manganese carbonates, and cut by nephelin syenite and nephelinites. The felspathic material of the vents is remar ably rich in orthoclase of unusually high potash content. The alter tion of the surrounding gneisses results in the introduction of aegirin augite at the expense of biotite and other minerals, and the altered roc are comparable to the fenite-tveitåsite series described by Brögger fro the Fen district of Telemark, Norway, where also they are associate with masses of limestone and ijolitic intrusives. The nepheline-syenit and the minor intrusions present a great variety of rock types contai ing many interesting minerals, some of which remain to be identifie The amphibole imerinite is recognized in the altered gneisses, and mineral resembling molengraaffite appears in some of the microfoyaite Analyses of some of the rocks have been made by M. H. Hey. Attentic is called to the existence of alkali and other igneous rocks mainly

oo age in other parts of Africa which are comparable with the va Series, and comparisons are made also with other alkali rocks iated with crystalline limestones. The vents appear to have been ed at least in part by explosive action, and this may be closely con- d with the presence of the carbonates. The limestones are regarded very deep-seated, possibly magmatic, origin, comparable with the matic limestones or carbonatites of Alnö in Sweden and of the Fen ict in Norway, but developed on a scale far larger than at either of localities. Their relations to the orthoclase-rocks and to the nephe- syenites are to be discussed after a more detailed examination has made of the crystalline limestones. W. C. S.

MES (Arthur) & HARWOOD (H. F.). *The volcanic area of Bufumbira. Part II: The petrology of the volcanic field of Bufumbira, south-west Uganda, and of other parts of the Birunga field.* Mem. Geol. Surv. Uganda, 1937, no. 3, pt. 2, xiv+300 pp., 5+9 pls. Price 21*s*.

e first part of this memoir, dealing with the geology of the area, by A. D. Combe and W. C. Simmons, and appeared in 1933. Inten- work has since been done on the materials they collected, and this d part contains a mass of detail that cannot be condensed into an ct. The volcanic rocks described include: the ugandite–olivine- ite series, leucitite–nephelinite series and vesuvite, kivite–leucite- nite series, murambite–absarokite group, shoshonitic absarokite– kite–trachyte series, shoshonite–latite series, and the limburgite– ybasalt series. Plutonic rocks (peridotite–biotite-pyroxenite series) epresented only by ejected blocks and inclusions. New rock names atungite, murambite, and ugandite. Twenty-six detailed chemical ses are given. The rocks are compared in detail with those from areas; their origin is discussed and evidence is adduced of trans- n [Min. Mag. **24**–367, 408]. L. J. S.

MES (Arthur). *The petrology of the katungite.* Geol. Mag. London, 1937, vol. 74, pp. 200–219, 1 pl.

e lava of the extinct volcano of Katunga in SW. Uganda is named ngite. It is a potash-rich (K_2O 2·65–4·09%) olivine-melilitite, with ocrysts of olivine (α 1·660, 2V 90°) and melilite (ω 1·660, ϵ 1·655), her with perovskite, magnetite, and rarely leucite, in a cryptocrystal- or glassy groundmass. Vesicles contain phillipsite, ashcroftine? d β about 1·535, γ 1·544), and natrolite. Detailed analyses of the s show SiO_2 35·37–37·93, Al_2O_3 6·50–6·83, Fe_2O_3 6·81–9·68, FeO

2·70–5·00, MgO 11·67–14·54, CaO 15·23–16·79, Na_2O 0·88–1·56 %, &c. Remarks are added on rock names and on petrogenesis. L. J. S.

[Nikolaev (V. A.)] Николаев (В. А.). Щелочные породы р. Каинды в Таласском Алатау.—Nikolaiev (V. A.). *The alkali rocks of the Kaïndy river in the Thalass Alatau range.* Труд. Центр. Научно-Иссл. Геол.-Разв. Инст. (Trans. Central Geol. Prosp. Inst. U.S.S.R.), 1935, no. 11, 112 pp., 1 map, 8 pl., 4 text-figs. (Russian with English summary.)

A description is given of an igneous stock 3·5 sq. km. intruded into the upper Devonian lower Carboniferous limestones 160 km. NE. of Tashkent. The plutonic complex, of a fluidal-banded structure, is composed of biotite-pyroxenite (anal. I), shonkinite (anal. II), and monzonite-gabbro (anal. III). The associated dikes include biotite-pyroxenite, shonkinite, fergusite (anal. IV), nepheline-syenite (anal. V), and quartz-syenite (anal. VI). Pseudoleucite (orthoclase-nepheline) is present in certain varieties of biotite-pyroxenite and is very abundant in fergusite (over 50 %), which also contains dactylitic (myrmekitic) intergrowths of orthoclase and nepheline. Fergusite is compared to borolanite from the type locality. The exocontact rocks are marble and calc-silicate hornfels. The mechanism of emplacement, assimilation, and differentiation are discussed, and altogether 9 chemical and 13 modal analyses are given.

	I.	II.	III.	IV.	V.	VI.
SiO_2 ...	40·83	46·40	50·48	48·33	54·87	62·0
TiO_2 ...	1·35	1·15	0·88	1·10	0·59	0·4
Al_2O_3 ...	5·53	11·51	17·72	17·46	20·72	17·6
Fe_2O_3 ...	10·39	6·15	5·26	4·81	3·10	2·7
FeO ...	6·67	5·60	3·73	3·47	1·44	1·4
MnO ...	0·24	0·34	0·25	0·12	0·22	0·2
MgO ...	13·28	7·65	5·30	3·10	0·45	1·2
CaO ...	17·22	12·25	10·02	6·67	3·28	4·6
BaO ...	0·34	0·58	0·23	0·71	0·34	0·3
Na_2O ...	0·54	1·89	2·62	2·60	6·02	4·0
K_2O ...	1·50	4·60	2·72	9·45	8·52	5·0
P_2O_5 ...	1·18	1·18	0·61	0·72	0·11	0·2
CO_2 ...	—	—	—	0·69	0·07	0·0
Cl ...	—	—	0·03	n.d.	0·02	—
H_2O+ ...	0·60	0·64	0·49	0·77	0·59	0·3
H_2O- ...	0·08	0·14	0·15	0·07	0·14	0·2
	99·75	100·08	100·49	100·07	100·48	100·5
Sp. gr. ...	3·28	3·06	2·95	2·83	2·68	2·7

S. I. T.

KVIN (A. V.)] Москвин (А. В.). Щелочные породы верховьев реки Исфайрам. *Alkaline rocks from the upper part of Isfairam river.* Труд. Петр. Инст. Акад. Наук СССР (Trav. Inst. Pétrogr. Acad. Sci. U.R.S.S.), 1934, no. 6, pp. 251–263, 2 figs. (Russian with English summary.)

ss is a preliminary account of an alkali-granite and alkali-syenite sion into Palaeozoic limestone and schist in the central part of range, Turkestan. Five analyses are given. S. I. T.

LRITZKY (A. N.)] Заварицкий (А. Н.). Щелочные горные породы Ишима.—ZAVARITSKY (A. N.). *The alkaline rocks of the Ishim river (west Siberia).* Труд. Петр. Инст. Акад. Наук СССР (Trav. Inst. Pétrogr. Acad. Sci. U.R.S.S.), 1936, no. 7–8, pp. 47–102, 1 pl., 2 text-figs. (Russian with English summary.)

e following alkali rocks are described: cancrinite-melanite-syenite mary calcite, scapolite-hornblende-syenite, porphyritic corundum-line-microsyenite, fluorite-melanite-nepheline-syenite, aegirine-me-nepheline-syenite, pyroxene-syenite or monzonite, essexite, lenite, epileucite-porphyry [M.A. **6**–418]. Certain metamorphic are also described. The field relations of the intrusive rocks are re, but apparently they are associated with the acid intrusive rocks region. S. I. T.

LLIE (D.). *Leucite-basanite from East Lothian.* Geol. Mag. London, 1936, vol. 73, pp. 16–19.

rock of a volcanic plug and dike on the coast near Tantallon , previously referred to as 'limburgite', is a leucite-basanite with yritic crystals of augite, olivine, and hornblende in a groundmass radorite, augite, magnetite, analcime, leucite, and glass. The leu-rystals (0·1 mm.) are largely altered to analcime. L. J. S.

RUM (J. A.). *Analcite rock from Cloudy Bay, Marlborough, New Zealand.* New Zealand Journ. Sci. Techn., 1936, vol. 18, pp. 120–23, 2 figs.

bles of an analcime-tinguaite, resembling huronite, contain abun-phenocrysts of analcime pseudomorphous after nepheline, and of ne and aegirine-augite, in a groundmass consisting of felted needles irine-augite enclosed in analcime. L. J. S.

Coulson (A. L.). *A soda-granite suite in the North-West Fronti Province.* Proc. Nat. Inst. Sci. India, 1936, vol. 2, pp. 103–111.

Chemical analyses are given of biotite-aegirine-arfvedsonite-gnei (soda-granite) from Khyber and of soda-porphyry containing aegiri and arfvedsonite from Peshawar. Alkali rocks have not been previous recorded from the Himalayan region. L. J. S.

[Kuznetzova (E. V.)] Кузнецова (Е. В.). Схема классификаци докембрийских гранитных пегматитов горной Балкарии.—Ku netsova (El. V.). *Classification (scheme) of the pre-Cambri pegmatites of the High Balkaria.* Зап. Всеросс. Мин. Общ. (Mé Soc. Russe Min.), 1936, ser. 2, vol. 65, pp. 385–417, 20 figs. (Russi with English summary.)

Pegmatite veins are found along the margin and in the roof of a gran diorite intrusion of High Balkaria (central Caucasus). In order of abu dance the minerals of the pegmatites are: quartz, microcline, plagi clase, muscovite, biotite, tourmaline, garnet (almandine, andradit hornblende, magnetite, apatite, beryl, columbite, tantalite, chlorit sulphides (pyrite, pyrrhotine, arsenopyrite). The pegmatites are classifi according to the scheme of A. E. Fersman into: (1) Pegmatites of pu descent; (2) Pegmatites of hybrid descent (contact pegmatites, mi matite pegmatites). S. I. T.

[Althausen (M. N.)] Альтгаузен (М. Н.). Месторождение Колотов Мамско-Витимского слюдоносного района.—Althausen (M. N. *The Kolotovka deposit of the Mama-Vitim mica-bearing region.* Тру Всесоюзн. Научно-Иссл. Инст. Мин. Сырья (Trans. All-Union S Research Inst. Econ. Min.), 1935, no. 86, 68 pp., 1 pl., 37 text-fig (Russian with English summary.)

Numerous pegmatite veins intrude into the metamorphic rocks of t region. The latter include kyanite-gneiss, quartzite, and crystalli limestone. The following types of pegmatite are distinguished: (medium-grained graphic microcline-pegmatite; (2) medium-graine mica-plagioclase-pegmatite; (3) gigantic pegmatite in which large crysta of muscovite, often intergrown with biotite, are found. The last ty usually occurs along the contact with gneiss. Shot-like spheroids graphite were found enclosed in quartz in one of the pegmatites. Sever analyses of pegmatites and metamorphic rocks are given, and the par genesis of the minerals discussed. S. I. T.

LER (G. D.)] Аллер (Г. Д.). Адун-Чолонские граниты.—ALLER (H.). *The granites of Adun-Cholon range.* Зап. Всеросс. Мин. Общ. (Mém. Soc. Russe Min.), 1936, ser. 2, vol. 65, pp. 289–314, 2 pls., 6 text-figs. (Russian with English summary.)

detailed petrological account is given of the granites and the ciated pegmatite and aplite veins of this well-known mineral lity. A scheme of the order of crystallization is suggested, together a genetic classification of pegmatites. Several analyses of granites schists are given. S. I. T.

KOVÁ (Božena). *O množství živce a křemene v pegmatitech.* [The quantity of felspar and quartz in pegmatites.] Příroda, Brno, 1936, vol. 29, pp. 233–236.

icrometric measurements of felspar and quartz in pegmatites, from raž near Písek, Bohemia, and from Dolní Bory, Cyrilov, and Rožná Moravia, confirm that there is no quantity relation corresponding eutectic. In twelve samples, quartz ranged from 21·6 to 34·4 % weight. F. S.

PAR (Jan Václav). *Stručný nástin mineralogie a geochemie říčanské zuly.* [Brief note on the mineralogy and geochemistry of the Říčany granite.] Věda Přírodní, 1936, vol. 17, pp. 168–171, 1 map.

gmatite veins intruded into contact-metamorphosed schists show mmetrical arrangement—felspars, tourmaline, quartz—with a tendy to monomineralic composition. The paragenesis of chemical ents is characterized by the accumulation of potassium towards end of the magmatic processes. Cassiterite and mispickel are rare arly crystallized constituents of the pegmatites. F. S.

GA-PONDAL (I.) & FRAGA-PADIN (Mª. de la E.). *Quimismo de la pegmatita litinífera de Goyás* (*Lalin*). Anal. Soc. Española Fís. Quím., 1934, vol. 32, pp. 1011–1020, 1 fig.

nalyses of the pegmatite (I), spodumene (II), and muscovite (III, MgO 0·06) show that in the minerals lithium is present only in II. spodumene forms crystals up to 10 cm. long and is in part altered.

SiO_2.	Al_2O_3.	Fe_2O_3.	FeO.	MnO.	CaO.	Li_2O.	Na_2O.	K_2O.	H_2O.
72·16	17·68	0·30	0·21	0·04	0·09	1·20	6·56	0·92	0·86
62·65	28·20	0·20	0·14	0·11	nil	5·55	1·22	1·21	0·75
45·13	37·50	1·25	0·10	0·02	nil	nil	1·21	10·54	4·36

L. J. S.

Campbell (Ian). *Types of pegmatites in the Archaean at Grand Canyon, Arizona.* Amer. Min., 1937, vol. 22, pp. 436–445, 2 figs.

Three types of granite pegmatites are recognized. I, Intrusive pegmatites, consisting almost entirely of quartz and microcline. II, Replacement pegmatites, formed by 'pegmatization' (analogous to granitization), with albite as the chief felspar. III, Felspathized quartz veins, showing replacement of quartz by microcline. These different types are not easily distinguished, unless seen in an early stage of their formation. L. J. S.

Bjørlykke (Harald). *Mineral paragenesis of some granite pegmatites near Kragerø, southern Norway.* Norsk Geol. Tidsskr., 1937, vol. 17, pp. 1–16, 6 figs.

The minerals found in the felspar quarries are noted. The pegmatites of this district differ from those of other parts of Norway in being rich in calcium, with the minerals calcite, hellandite, sphene, betafite, and apatite, and also in an abundance of tourmaline and scarcity of beryl [M.A. **6**–214, 231]. L. J. S.

Bjørlykke (Harald). *The granite pegmatites of southern Norway.* Amer. Min., 1937, vol. 22, pp. 241–255, 5 figs.

Summary of an earlier paper [M.A. **6**–214]. L. J. S.

Horwood (H. C.). *Granitization in the Cross Lake Region, Manitoba.* Trans. Roy. Soc. Canada, 1936, ser 3, vol. 30, sect. 4, pp. 99–117, 7 figs.

At contact with intruded granite, andesite shows a gradual transition into granodiorite-gneiss and arkose into granite-gneiss. In the andesite there is a gain of quartz, potash-felspar, and biotite, and loss of hornblende; in the arkose potash-felspar replaces quartz. The chemical composition of the rocks (calculated from micrometric analysis of thin sections) shows in the andesite gain of SiO_2 and K_2O, and loss of Fe_2O_3, FeO, MgO; and in the arkose gain of Al_2O_3 and K_2O with loss of SiO_2. These changes were effected by dilute alkaline solutions containing SiO_2, Al_2O_3, and K_2O emanating from the granite at about 600° C. L. J. S.

Barth (Tom. F. W.). *Structural and petrologic studies in Dutchess County, New York.* Bull. Geol. Soc. Amer., 1936, vol. 47, pp. 775–850, 4 pls., 8 text-figs.

Palaeozoic argillaceous sediments show progressive metamorphism in which muscovite-slate, kyanite-schist, and fibrolite-gneiss facies are

guished. Several chemical analyses are given of the rocks and of minerals isolated from them. A four-fold genetic classification of includes igneous, syntectic, metamorphic, and sedimentary. Syn- rocks are those formed by stewing of previously solidified rocks in s of magmatic and/or palingenic origin; e.g. felspathized schists pilite. L. J. S.

U (Kazuo) [1899–1937]. *A remarkable association of several thermal nd stress minerals in the Yu hsi kou iron-bearing district.* Mem. Ryojun Coll. Engineering, 1935, vol. 8, no. 8, pp. 167–186, 2 pls., text-figs.

e intrusion of tourmaline-granite into gneisses and crystalline lime- has produced hornfelses of various types with garnet, hypersthene, phyllite, grunerite, xanthophyllite, olivine, quartz, and epidote. rsthene, as crystals up to 20 cm. long, has sp. gr. 3·81, α 1·7549, 14, γ 1·7727, 2V 63–76°, negative [cf. Min. Mag. **24**–527]. The iron nsists of magnetite disseminated in crystalline limestone and in rnfelses. The different mineral associations are considered.

L. J. S.

SPEED (G. E.) & COOMBS (Howard A.). *Replacement breccias of the Lower Keechelus.* Amer. Journ. Sci., 1937, ser. 5, vol. 34, pp. 12–23, 3 figs.

e rocks of this formation of Tertiary age in the Cascade Ranges of ington have been thought to be of pyroclastic origin. They show brown fragments of sedimentary rock in a greyish-green matrix also contains remnants of sedimentary material. Analyses of two portions show an increase of SiO_2 and K_2O and a decrease of FeO, MgO, and CaO in the matrix, the composition of which is similar to that of a dacite. It is suggested that sandy shales invaded ranodiorite and intensely folded underwent recrystallization by a ss of additive hydrothermal metamorphism. L. J. S.

LIPS (A. H.) & HESS (H. H.). *Metamorphic differentiation at contacts between serpentinite and siliceous rocks.* Amer. Min., 1936, vol. 21, pp. 333–362, 10 figs.

the serpentine belt extending from Vermont into southern Quebec ountry-rock is usually quartz-mica-schist or phyllite. At the con- in the lower temperature type of metamorphic differentiation, is a zone of talc on the serpentine side with magnesite veins in the ntine, and a zone of chlorite on the country-rock side. In a higher

temperature type these zones consist respectively of actinolite ar biotite; but this may be complicated by lower temperature type bein superposed. Several rock analyses are given, and the transference material from one rock to another as well as the addition of material h hydrothermal solutions are discussed. Similar changes in other area e.g. Shetland [Min. Mag. **23**–519], are compared. L. J. S.

Mountain (Edgar D.). *Syntectic phenomena in Karroo dolerite Coedmore quarries, Durban.* Trans. Geol. Soc. South Africa, 193 vol. 38 (for 1935), pp. 93–112, 2 pls., 1 text-fig.

A sheet of dolerite intrusive in Table Mountain Sandstone has enclose masses of the latter and has taken a certain amount of silica into solutio The incorporation of sediment has influenced the plagioclase of th dolerite in several ways. When silicification took place before the cry tallization of labradorite was finished, the latter was replaced by a mo acid plagioclase; but when the labradorite had completed its crystalliz tion it was replaced by micropegmatite or even by chlorite. The mod fied dolerite ranges in composition from quartz-dolerite to augit granophyre. S. J. S.

[Aleshkov (A. N.)] Алешков (А. Н.). Геологический очерк райо горы Неройки.—Aleshkov (A. N.). *Short geological description the Neroyka Mnt reqion* [sic]. Приполярный Урал [Subpolar Ural Сов. Изуч. Произв. Сил СССР и Петрогр. Инст. им. Ф. К Левинсон-Лессинга [Council Research Econ. Res. U.S.S.R. Petrogr. Inst. Levinson-Lessing], 1937, Ural Ser., no. 6, pp. 3–5 22 figs. (Russian with English summary.)

[Aleshkov (A. N.)] Алешков (А. Н.). Геологический очерк райо Сура-Из.—Alechkov [*sic*] (A. N.). *Short geological description the Sura-Iz Mnt region.* Ibid., pp. 57–86, 19 figs. (Russian wit English summary.)

[Laemmlein (G. G.)] Леммлейн (Г. Г.). Кристаллографическ исследование кварца с горы Сура-Из.—Laemmlein (G.). *Crysta lographic investigation of quartz from Sura-Iz Mnt.* Ibid., pp. 87–9 1 fig. (Russian with English summary.)

The geological structure of these two adjoining districts is simila The metamorphic rocks (phyllite, micaite, listwanite, marble, an quartzite) were injected by spilitic magma mainly represented by gree schists. This was followed by the injection of granitic magma, whic according to the author, was produced by the anatexis of para-schist

ïtic magma interacting with basic rocks gave rise to a series of id rocks including gabbro-diorite, diorite, and syenite. Among the rock types are quartzolite, a palingenetic quartzite and calcite-te, as an intrusive rock cutting gabbro. Rock-crystal is found in al screes and it is probably associated with the injection of quartz-natite into the green schists. One of the quartz crystals from the ika region is 120 × 75 cm. and weighs 1700 kg. Quartz crystals are encrusted with chlorite and contain inclusions of green schist, ite, brookite, magnetite, rutile, sphene, and anatase. Some show ints of tabular calcite crystals, and this together with a singular iation of quartz and calcite suggests their paragenesis from late natic solutions. S. I. T.

KSDALE (Julian D.). *The Shonkin Sag laccolith.* Amer. Journ. Sci., 1937, ser. 5, vol. 33, pp. 321–359, 1 pl., 10 text-figs.

is layered laccolith in the Highwood Mts. of Montana, which has regarded as a classic example of differentiation in place from a e intrusion, is now described as a compound laccolith formed by ssive intrusions of shonkinite, syenite, and pegmatite. L. J. S.

SHALL (P.). *Acid rocks of the Taupo-Rotorua volcanic district.* Trans. Roy. Soc., New Zealand, 1935, vol. 64, pp. 323–365, 9 pls., 1 text-fig. (sketch-map).

further account of the ignimbrites [M.A. **5**–294], with descriptions ree main types, one of which has long been known under the name ilsonite. Published analyses are tabulated with one new analysis ridymite-rhyolite' from Waihi. The analysed rocks have the com-ion of rhyolites with rather high lime. Ignimbrites are defined as eous rocks of acid or perhaps intermediate composition which have formed from material that has been ejected from orifices in the of a multitude of highly incandescent particles which were mainly minute size'. The temperature of the material when deposited seems ave been at least 1200° C., but below 1470° C. Some heating tests arious obsidians are described. A classification into 'pulverulites, culites, and lapidites' is based on structure, and in each group there be vitreous, radial, plumose, or pectinate phases. W. C. S.

SHALL (P.). *Geology of Mayor Island.* Trans. Roy. Soc. New Zea-land, 1936, vol. 66, pp. 337–345, 1 fig.

vities in comendites contain small crystals of aegirine and riebeckite . **5**–295]. Riebeckite as long blades up to 1 cm., with (010) narrow

and prisms relatively wide, has extinction 2·5°, pleochroism α dark-blu β pale-blue, γ brownish-yellow. Some cavities and joint-planes conta opal with a fine play of colour with scarlet fire. Compact comendites Opo bay contain also crystals of aenigmatite, and in the groundma mossy growths of the variety cossyrite. Tuhualite [M.A. **6**–536] occu in situ in rocks in the crater wall. Some of the comendites develo spherulitic and banded structures. Two new analyses of comendite a given. W. C. S.

Sandford (K. S.). *Geological observations on the north-west frontiers the Anglo-Egyptian Sudan and the adjoining part of the southe Libyan Desert.* Quart. Journ. Geol. Soc. London, 1935, vol. 9 pp. 323–381, 7 pls. (map), 11 text-figs.

Two areas of lavas and a number of scattered outcrops of intrusi rocks, post-Nubian sandstone in age, are described. One isolated dik cutting Nubian sandstone, west of Laqiya (19° 53′ N., 27° 20′ E.) described as a quartz-tuff. It consists of devitrified glass with jagge fragments of quartz. Sandstone-walls of craters in the volcanic fiel between 'Uweinat and the Gilf Kebir show a selvage consisting isotropic black or brown glassy material cementing shattered quart grains. Similar material glazes the walls of remarkable cavities whic traverse the surface of the sandstone near the craters. The cavities a usually empty, but some contain fragments of lithomarge or of decon posed trachyte. The cavities are fissures up which molten rock ma have ascended and subsided before cooling. The cavity walls are highly silicified sandstone and stand up 10, or sometimes as much a 30, feet above the surface. Photomicrographs are given of one of th specimens from the selvage on a crater wall, also of basanite, phonolit trachyte, soda-trachyte, and trachytic phonolite. W. C. S.

Sandford (K. S.). *Extinct volcanoes and associated intrusions in th Libyan Desert.* Trans. Roy. Geol. Soc. Cornwall, 1935, vol. 1 pp. 331–358, 4 pls., 2 text-figs.

Further descriptions of the volcanic fields described in the pape abstracted above. A photomicrograph is now given of the 'quartz-tuf dike west of Laqiya, also of a monchiquite from a loose block at the foo of Sandara Hill some 100 km. SW. of 'Uweinat. This paper describes con centrations of heavy black material rich in manganese both as irregula lumps in the volcanic rocks near Sandara Hill, and also at the contac

olcanic rocks with the glazed sandstone walls described in the eding abstract. W. C. S.

WER (H. I.). *Symplectite-bearing nodules in the Ardgour marble, Argyllshire.* Geol. Mag. London, 1936, vol. 73, pp. 448–468, 6 figs. odules, probably representing a band of impure limestone in the d marble, consist of idocrase, scapolite, garnet, augite, bytownite, clase, clinozoisite, calcite, &c. (24 minerals are noted), forming lectic intergrowths and with indications of various mineral replace-s. Analyses by N. Sahlbom are given of: I, idocrase, also F 1·08 %, r. 3·42, ω 1·724, ϵ 1·715; II, pink pyroxene, sp. gr. 3·42, α 1·694, 99, γ 1·721, $\gamma:c = 43\frac{1}{2}°$, 2V 59°, positive.

SiO_2.	TiO_2.	Al_2O_3.	Fe_2O_3.	FeO.	MnO.	MgO.	CaO.	Na_2O.	K_2O.	H_2O
36·53	3·75	15·79	2·05	2·11	0·11	2·61	35·70	0·38	0·21	0·70
46·32	1·20	6·51	1·48	8·45	0·15	10·45	24·10	0·31	0·59	0·44.

L. J. S.

EY (C. E.). *Enderbite, a new member of the charnockite series.* Geol. Mag. London, 1936, vol. 73, pp. 312–316.

cks from Enderby Land, Antarctica, include acid, basic, and ultra- members of the charnockite series, and also a related type, called *rbite*, in which plagioclase (as antiperthite) is the predominant ar, rather than microcline (as microperthite). This rock has a um-grained granitic texture with faint foliation, and is composed uartz 42·5, antiperthite 53 (rods of orthoclase 4·5, in plates of sine 48·5), hypersthene 3·0, and magnetite 1·0 %. Analysis shows K_2O and high CaO: SiO_2 75·50, TiO_2 0·08, Al_2O_3 13·92, Fe_2O_3 0·48, 1·17, MgO 0·52, CaO 3·54, Na_2O 3·64, K_2O 0·74, H_2O+ 0·15, $-$ 0·30 = 100·04, sp. gr. 2·67. Birkremite (of C. F. Kolderup, 1903) Norway is a charnockite. L. J. S.

EDEV (A. P.)] Лебедев (А. П.). Эпидотовый диорит из восточной Сибири.—LEBEDEV (A. P.). *Epidote-diorite from the east Siberia.* Труд. Петр. Инст. Акад. Наук СССР (Trav. Inst. Pétrogr. Acad. Sci. U.R.S.S.), 1936, no. 7–8, pp. 105–112, 2 figs. (Russian with English summary.)

orite with primary epidote is found in the basin of the river Niukzha, butary of the Olekma. The analysis of the diorite by M. Ermolaeva : SiO_2 59·86, TiO_2 0·76, Al_2O_3 19·73, Fe_2O_3 1·60, FeO 2·88, MnO MgO 1·61, CaO 6·46, Na_2O 5·02, K_2O 1·25, H_2O+ 0·79, H_2O- = '100·19'. Epidote occurs in the form of prismatic crystals, 5·2 mm. long, and usually enclosed in biotite; α 1·730, γ 1·769,

$\gamma-\alpha$ 0·043, 2V 75°, negative, strong dispersion. Orthite (pleochroic 2V 87°, negative) is sometimes found enclosed in epidote and optically continuous with it. S. I. T.

[Rozhkov (B. N.) & Moore (G. G.)] Рожков (Б. Н.) и Моор (Г. Г.). Граниты Анабарского докембрия и связанные с ними проявления металлоносности.—Rožkov (B. N.) & Moore (G. G.). *Anabar pre-Cambrian granites and the phenomena of ore concentration connected therewith.* Изв. Акад. Наук СССР, Отд. Мат. Ест. Наук, Сер. Геол. (Bull. Acad. Sci. U.R.S.S., Cl. Sci. Math. Nat., Sér. Géol.), 1936, pp. 729–773, 1 fig. (Russian with English summary.)

Anabar (NE. Siberia) schists are injected by acid and basic magmas. The granites occur as stocks, sills, and migmatite injection complexes. The normal type of granite with microcline, near the contact with schists, especially in migmatite complexes, is transformed into plagioclase-, amphibole-, and hypersthene-granites. The exo-contact zone shows evidence of potash transfusion and an abundant development of potash-felspar and biotite. Pegmatite, aplite, and quartz veins are well represented, and some veins carry numerous ore-minerals, such as auriferous sulphides, monazite, cassiterite, &c. Four analyses of rocks are given. S. I. T.

[Ziv (E. F.) & Timofeev (V. D.)] Зив (Е. Ф.) и Тимофеев (В. Д.). Шеелитоносность скарнов восточных отрогов Кузнецкого Ала-Тау.—Ziv (E. F.) & Timofeiev (V. D.). *The scheelite in the "scarns" of the eastern branches of the Kuznetsk Ala-Tau.* Изв. Акад. Наук СССР, Отд. Мат. Ест. Наук, Сер. Геол. (Bull. Acad. Sci. U.R.S.S., Cl. Sci. Math. Nat., Sér. Géol.), 1936, pp. 869–911, 10 figs. (Russian with English summary.)

The igneous rocks of this region in Siberia (54° N., 90° E.), in order of their consolidation, are gabbro, diorite, granodiorite, pegmatite, and aplite veins. Contact metamorphism of the adjoining sediments gave rise to marble and hornfels. In the penumatolytic and hydrothermal magmatic stages metamorphism was followed by extensive metasomatism which gave rise to skarn rock. According to the dominant mineral, the skarns are subdivided into pyroxene, garnet, magnetite, calcite, quartz, epidote, serpentine, diopside, scapolite, wollastonite, and amphibole skarns. Scheelite is usually associated with garnet and pyroxene-garnet skarn. Three analyses of scheelite, two of diopside, and several analyses of rocks are given. S. I. T.

LEMS (H. W. V.). *Contribution to the petrology of the crystalline schists of western central Celebes (Netherlands East Indies).* Proefschrift Univ. Amsterdam. Amsterdam (J. F. Duwaer), 1937, 147 pp. (English), 8 pp. (Dutch summary), 1 pl., 11 text-figs.

cks collected SW. of Poso include crystalline limestones (some con- ng lawsonite), phyllites, quartzites, and various schists, including chlo- -quartz-mica-schist, glaucophane-lawsonite-quartz-chlorite-schist, t-epidote-glaucophane-schist, lawsonite-orthite-schist, crossite- -quartz-rock, &c. Chemical analyses are given of calcareous phyllite glaucophane-lawsonite-schist. L. J. S.

ROV (K. N.) & BYKHOVER (N. A.)] Озеров (К. Н.) и Быховер (Н. А.). Месторождения корунда и кианита Верхне-Тимптонского района Якутской АССР.—OZEROV (K. N.) & BYKHOVER (N. A.). *Corundum and cyanite deposits of the Verkhne-Timpton district of the Yakutian Autonomous Soviet Socialistic Republic.* Труд. Центр. Научно-Иссл. Геол.-Разв. Инст. (Trans. Centr. Geol. Prosp. Inst.), 1936, no. 82, 106 pp., 6 pl., 1 map. (Russian with English summary.)

corundum-kyanite-rock occurs in the form of flat lenses among ite-like diaphthorite mylonitic epigneisses, named 'gneissoids' by Korzhinsky. Corundum, usually ruby-red and rarely blue in r, occurs as tabular crystals. Kyanite is grey or green in colour. green variety is called chrome-kyanite; its analysis by E. V. ovich gave SiO_2 33·76, TiO_2 1·10, Al_2O_3 62·46, Cr_2O_3 1·81, Fe_2O_3 FeO 0·29 = 99·76 with α 1·718, γ 1·734, 2V 82°, negative. Other ls present in this rock are muscovite, chlorite, margarite, tour- e, diaspore, &c. The rock probably represents a metamorphosed te. Various schists, gneisses, and intrusive igneous rocks are also bed and a number of analyses given. S. I. T.

LETSKY (B. M.)] Куплетский (Б. М.). Количественно-минералогический состав основных пород.—KUPLETSKY (B. M.). *Quantitative mineralogical composition of basic rock* [sic]. Труд. Петр. Инст. Акад. Наук СССР (Trav. Inst. Pétrogr. Acad. Sci. U.R.S.S.), 1936, no. 9, pp. 53–83, 13 figs. (Russian with English summary.)

e statistical study of 690 modal analyses of basic and ultrabasic provided the author with a rich material for a rational scheme of fication [cf. M.A. **6**–313]. Variation curves for various component als are constructed and discussed. Mesocratic gabbros, in their osition, fall into the region of plagioclase-pyroxene cotectic, and

this apparently supports Vogt's idea that these rocks are anchi-eutecti
Two lines of differentiation of basic magma are suggested: (1) gabbr
diabasic, and (2) norito-anorthositic. S. I. T.

[Ustiev (E. K.)] Устиев (Е. К.). Тридимитовый дацит с Кельско
плато в Центральном Кавказе.—*On the tridymite-dacite from vo
canic region of Keli in the middle Caucasus.* Труд. Петр. Инст. Ака
Наук СССР (Trav. Inst. Pétrogr. Acad. Sci. U.R.S.S.), 193
no. 6, pp. 159–164, 2 figs. (Russian with English summary.)

Tridymite-dacite, containing on an average 5 % of tridymite in vesicle
is found in the form of red taxitic bands in a grey dacite lava flo
Tridymite occurs as fairly large crystals with pearly lustre; $\gamma - \alpha$ 0·002
sign positive, elongation negative, optic axial angle small. A sma
amount of cristobalite with α 1·4824, γ 1·4876, is also present. Analys
by V. A. Moleva of tridymite-dacite gave SiO_2 66·30, TiO_2 0·66, Al_2O
17·32, Fe_2O_3 1·12, FeO 2·25, MgO 1·69, CaO 3·70, Na_2O 4·83, K_2O 1·7
ign. loss 0·25 = 99·82. A partial analysis of the grey dacite ga
SiO_2 66·82. The formation of tridymite and the red colouring of th
rock (due to the inclusion of minute flakes of haematite in the glas
base) is attributed to the action of magmatic volatiles. S. I. T.

[Belyankin (D. S.) & Eremeev (V. P.)] Белянкин (Д. С.) и Ерем
(В. П.). Вулканические стекла Аджаристана.—Beljank
(D. S.) and Eremeyeff (V. P.). *Volcanic glasses of Adjarista*
Труд. Петр. Инст. Акад. Наук СССР (Trav. Inst. Pétrogr. Aca
Sci. U.R.S.S.), 1935, no. 5, pp. 153–168, 2 pls., 2 text-figs. (Russia
with English summary.)

Volcanic glasses are found associated with the Eocene porphyri
lavas of Adzharistan (the basin of the river Chorokh, near Batu
Transcaucasia). They are almost black in colour with conchoidal fra
ture and have the appearance of obsidian. The texture is perliti
fluidal, or ataxitic. A small amount of crystalline minerals (andesin
clinopyroxene, and magnetite) is present in almost all glasses. Th
analysis of a homogeneous glass from 3 km. west of Erge by V.
Moleva gave SiO_2 57·20, TiO_2 0·78, Al_2O_3 15·61, Fe_2O_3 2·12, FeO 3·8
MnO 0·14, MgO 1·21, CaO 6·40, Na_2O 1·84, K_2O 1·14, H_2O+ 7·1
H_2O- 2·50 = 99·87; sp. gr. 2·3648, n 1·533. Chemically this gla
corresponds to andesito-dacite. The determination of water in oth
samples of glass shows a variation from 6 to 12 % and of refractive i
dices from 1·558 to 1·508. S. I. T.

ʏANKIN (D. S.) & IVANOVA (V. P.)] Белянкин (Д. С.) и Иванова (В. П.). Термооптический анализ вулканического стекла.—BELJANKIN (D. S.) & IVANOVA (V. P.). *Thermo-optical analysis of volcanic glass from Adzharistan.* Труд. Петр. Инст. Акад. Наук СССР (Trav. Inst. Pétrogr. Acad. Sci. U.R.S.S.), 1934, no. 6, pp. 381–392, 10 figs. (Russian with English summary.)

ne volcanic glass from Erge (preceding abstract) was subjected to ermal study. The heating curve suggests that one part of water—orbent water'—is given out below 100° C., and is wholly readsorbed ne exposure of the sample in air. The 'constitutional water' is given between 100° and 500° C. and the rehydration is only partial. The of water is accompanied by the solidification of glass, as judged by refractive index curve. Two exothermal breaks at 350° and 600° ttributed to the oxidation of ferrous iron in the glass. S. I. T.

LOUSOVA (V. T.)] Белоусова (В. Т.). Траппы с реки Хатанги.—BELOUSOV (T.). *The traps from r. Hatanga.* Труд. Петр. Инст. Акад. Наук СССР (Trav. Inst. Pétrogr. Acad. Sci. U.R.S.S.), 1936, no. 9, pp. 85–103. (Russian with English summary.)

ne effusive and intrusive traps from the river Khatanga (Arctic ria) comprise the following types: olivine-dolerite with orthorhombic xene, tholeiite, and basalt. Olivine, the crystallization of which wed that of plagioclase, shows a variation of 2V 65–85°, negative, marked zonal structure. Plagioclase ranges from labradorite to thite. Pyroxene is represented by enstatite, enstatite-augite and onite-hedenbergite (2V 40–60°, negative, $\gamma:c = 30–46°, \gamma-\alpha\,0{\cdot}0249–97$). The accessories are magnetite, biotite, chlorite, hornblende, ite, talc, iddingsite. Four analyses of traps show their affinity to r Siberian traps and Arctic basalts and dolerites [M.A. **6**–319].

S. I. T.

ZBERG (A. S.), TZVETKOV (A. I.), OSIPOV (M. V.), & RUDZIT (G. P.)] Гинзберг (А. С.), Цветков (А. И.), Осипов (М. В.) и Рудзит (Г. П.). Тулунский трапп как материал для каменного литья.—GINSBERG (A. S.), ČVETCOV (A. J.), OSIPOV (M. W.), and RUDZIT (G. P.). *The Tulan traps as a material for stone smelting industry.* Труд. Петр. Инст. Акад. Наук СССР (Trav. Inst. Pétrogr. Acad. Sci. U.R.S.S.), 1936, no. 7–8, pp. 263–308, 20 figs. (Russian with English summary.)

he paper deals mainly with the petrurgy (science of cast rock material)

of Siberian traps and the properties of the cast ware. In the petro graphical description of the raw material an account of Tulun doleri is given [M.A. **6**–317]. It consists of labradorite (An_{60}), pyroxene, iro ore, apatite, and olivine. Olivine is zonal with 2V 72° (central) an 2V 62° (outer), $\gamma - \alpha$ 0·041. The crystallization of olivine preceded an followed that of felspar, but olivine crystals enclosed in plagioclase hav larger axial angles than those enclosing plagioclase laths. S. I. T.

[Zavaritzky (A. N.)] Заварицкий (А. Н.). Об атачите и некоторы новых данных по геологии месторождения г. Магнитной.—Zawarickij (Zavaritsky) (A.). *Sur l'atatchite et sur quelque nouvelles données concernant la géologie du gisement du mont Mag nitnaia.* Изв. Акад. Наук СССР, Отд. Мат. Ест., Сер. Геол (Bull. Acad. Sci. U.R.S.S., Math. Nat. Cl., Sér. Géol.), 1936, pp. 321 324 (Russian), pp. 324–327 (French).

Atatschite (from Atach ridge, Mt. Magnitnaya, Urals), previousl described as an igneous rock (J. Morozewicz, 1901), is proved to be tu and conglomerate metasomatically altered under the influence of graniti magma. S. I. T.

Miscellaneous.

Tertsch (H.). *Bemerkungen zur Frage der Verbreitung und zur Geo metrie der Zwillingsbildungen.* Zeits. Krist., 1936, vol. 94, pp. 461 490, 2 figs.

Amongst 1400 mineral species twinning has been observed in 26 (19 %). The different types of twinning in each crystal system ar enumerated. L. J. S.

Tertsch (H.). *Beobachtungen an Orthoklas-Zwillingen nach dem Karls bader Gesetz.* Zentr. Min., Abt. A, 1936, pp. 198–207, 4 figs.

Carlsbad twins of orthoclase of the habit with predominating (001) and ($\bar{1}$01) show a surface of combination in one plane parallel to (010) —pegmatite type. Those with predominating (001) and ($\bar{2}$01) show a stepping in the combination surface—rock type. L. J. S.

[Bushinsky (G. I.)] Бушинский (Г. И.). К вопросу о генезисе флюорита в осадочных породах.—Bušinsky (G. I.). *On the genesis of fluorite in sedimentary rocks.* Изв. Акад. Наук СССР, Отд. Мат. Ест. Наук, Сер. Геол. (Bull. Acad. Sci. U.R.S.S., Cl. Sci. Math. Nat., Sér. Géol.), 1936, pp. 775–793, 3 figs. (Russian with English summary.)

From his study of the fluorite and ratovkite deposits in the Moscow

ict and a comparison between them and similar deposits elsewhere
uthor premises that, in its initial stage of precipitation from sea-
r, the bulk of fluorine was concentrated in phosphorite. He ques-
the alleged connexion of sedimentary fluorite with magmatic
ity, the frequent association of fluorite with dolomitic or red-
red sediments suggesting that it has been formed in relict seas
. 2–124, 179]. S. I. T.

AVDIN (V. F.)] Алявдин (В. Ф.). Исследование кристаллов
оловянного камня из Сохондинского оловянного месторождения
Южное Забайкалье).—ALJAWDIN (W.). *Die Untersuchung der
Zinnsteinkristalle von der Sochondolagerstätte (Sud-Transbaikalien).*
Зап. Всеросс. Мин. Общ. (Mém. Soc. Russe Min.), 1936, ser. 2,
vol. 65, pp. 444–453, 1 fig. (Russian with German summary.)
this region cassiterite is found in quartz veins together with
lite, arsenopyrite, and molybdenite. On the cassiterite crystals
ramidal faces are well developed, while diprismatic faces are cor-
. The dominant faces are (231) and (230). Faces (13.17.6),
2.11), and (10.52.15) were also observed. S. I. T.

EVINSKY (P. N.)] Чирвинский (П. Н.). Ортит и его парагенезис
в кристаллических породах Кольского полуострова.—TSCHIR-
WINSKY (P.). *Orthit und dessen Paragenesis in den kristallinen
Gesteinen des Halbinsel Kola.* Зап. Всеросс. Мин. Общ. (Mém.
Soc. Russe Min.), 1936, ser. 2, vol. 65, pp. 163–177. (Russian with
German summary.)
mall quantities of orthite (average 0·39 wt. %) are found in the pre-
brian gneisses, granite, and pegmatite. It is apparently rich in
earths, and some orthite grains enclosed in biotite and hornblende
urrounded by pleochroic haloes. Genetically it is connected with
ranite magma. S. I. T.

LETSKY (B. M.)] Куплетский (Б. М.). Кнопит в породах основной
магмы.—KUPLETSKIJ (B. M.). *Knopite in basic magma rocks.* Изв.
Акад. Наук СССР, Отд. Мат. Ест., Сер. Геол. (Bull. Acad. Sci.
U.R.S.S., Cl. Sci. Math. Nat., Sér. Géol.), 1936, p. 109 (Russian),
pp. 110–111 (English).
opitite is a knopite-rich rock occurring as veins in a pre-Cambrian
enite near Afrikanda station on the Murmansk railway. Knopite
s in this rock as fine aggregates of steel-grey isotropic grains,

n 2·37; analysis by V. A. Egorov gave SiO_2 0·96, TiO_2 56·35, rar earths 2·23, Al_2O_3 0·24, Fe_2O_3 0·78, FeO 0·70, MnO 0·02, MgO 0·1 CaO 37·52, H_2O+ 0·57, H_2O- 0·16 = 99·67. Knopitite veins are ass ciated with the veins and segregations of titanomagnetite and probab represent a late differentiate of the pyroxenite magma. Nephelin bearing segregations are also present. S. I. T.

Szentpétery (S. v.). *Titanomagnetithältige Gesteine der Vaskapugeg vom Bükkgebirge in Ungarn.* Acta Chem. Min. Physica, Szeg 1937, vol. 6, pp. 55–100, 7 pls.

Analyses of titanomagnetite from anorthosite-gabbro (I) and perid tite (II) correspond with $2Fe_2O_3.7FeO.5TiO_2$ and $Fe_2O_3.7FeO.6Ti$ respectively, after deducting $MgAl_2O_4$ and $MgTiO_3$.

	SiO_2.	TiO_2.	Al_2O_3.	Fe_2O_3.	FeO.	MnO.	MgO.	CaO.	Total.	Sp.
I	0·10	32·20	1·74	23·98	40·10	0·42	0·70	—	99·24	4·7
II.	2·54	41·30	—	11·49	38·60	1·01	3·18	1·53	99·65	4·6

V. Z.

Palache (Charles). *Chalcomenite from Bolivia.* Amer. Min., 193 vol. 22, pp. 790–795, 2 figs.

—— *Supplementary note on chalcomenite.* Ibid., p. 1123.

Small, transparent, blue crystals in cavities in blockite = penrose [M.A. **6**–490] from Hiaco mine, Colquechaca, are orthorhombic-h sphenoidal (not monoclinic) with $a:b:c = 0·7325:1:0·8077$. The u cell, a 6·56, b 9·10, c 7·36 Å., contains $4(CuSeO_3.2H_2O)$; space-gro $P2_12_12_1$. Sp. gr. 3·35, H. > 2. $\alpha = a$, $\gamma = b$, α 1·712, β 1·732, γ 1·7 2V nearly zero, negative.

Measurements by the late H. Ungemach of chalcomenite from Sier de Umango, Argentina, gave $a:b:c = 0·7274:1:0·7998$, and confirm t sphenoidal symmetry; new crystal-forms are (112) and (121).

L. J. S.

Minguzzi (Carlo). *Sulla presenza della portlandite fra i prodotti vesuvia* Periodico Min. Roma, 1937, vol. 8, pp. 5–13.

Analysis of a yellow powder on lava from the crater of Vesuvi showed Al, K, Na sulphates with a surplus of CaO (10·44 %), Al, H_2 Under the microscope, minute (0·005–0·03 mm.) hexagonal prisms portlandite $Ca(OH)_2$ [Min. Mag. **23**–419] with ω 1·57, ϵ 1·54 were iden fied; together with aphthitalite, aluminite, and amorphous aluminiu hydroxide. L. J. S.